

Interstate 580 Eastbound Truck Climbing Lane Project

ALAMEDA COUNTY, CALIFORNIA
DISTRICT 4 – ALA – 580 (PM R4.9/R8.2)
Expenditure Authorization 4A0700

Initial Study with Proposed Mitigated Negative Declaration/Environmental Assessment



**Prepared by the
State of California Department of Transportation**

The environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried out by Caltrans under its assumption of responsibility pursuant to 23 U.S.C. 327.



August 2009

GENERAL INFORMATION ABOUT THIS DOCUMENT

What's in this document:

The California Department of Transportation (Department), as assigned by the Federal Highway Administration (FHWA), has prepared this Initial Study/Environmental Assessment (IS/EA), which examines the potential environmental impacts of the alternatives being considered for the proposed project located in Alameda County, California. The document describes why the project is being proposed, alternatives for the project, the existing environment that could be affected by the project, the potential impacts from each of the alternatives, and the proposed avoidance, minimization, and/or compensation measures.

What you should do:

- Please read this Initial Study/Environmental Assessment. Additional copies of this document as well as the technical studies are available for review at the Department of Transportation District 04 Office, 111 Grand Avenue, Oakland, CA 94612, and the following two locations:

Livermore Library Springtown Branch
998 Bluebell Drive
Livermore, CA 94551

Livermore Library Civic Center Branch
1188 South Livermore Avenue
Livermore, CA 94550

- We welcome your comments. If you have any comments regarding the proposed project, please send your written comments to the Department by the deadline.

- Submit comments via postal mail to:

Ed Pang, Environmental Branch Chief
Attention: Tom Rosevear
Department of Transportation, Office of Environmental Analysis
P.O. Box 23660, Oakland, CA 94623-0660

- Submit comments via email to: trosevea@dot.ca.gov
- Submit comments by September 18, 2009.

What happens next:

After comments are received from the public and reviewing agencies, the Department, as assigned by the Federal Highway Administration, may: (1) give environmental approval to the proposed project, (2) undertake additional environmental studies, or (3) abandon the project. If the project is given environmental approval and funding is appropriated, the Department could design and construct all or part of the project.

For individuals with sensory disabilities, this document can be made available in Braille, large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternate formats, please call or write to Department of Transportation, District 4 Office of Public Affairs, P.O. Box 23660, Oakland, CA 94623-0660, (510) 286-4444 Voice, or use the California Relay Service 1 (800) 735-2929 (TTY), 1 (800) 735-2929 (Voice) or 711.

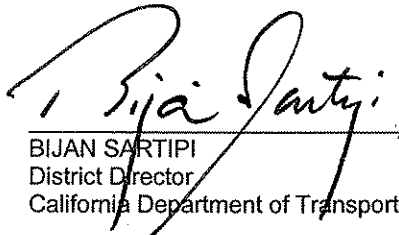
Addition of a truck climbing lane in the eastbound direction on Interstate 580 from the Greenville Road Interchange in the City of Livermore, County of Alameda, PM R8.2 to one mile east of North Flynn Road Interchange, unincorporated County of Alameda, PM R4.9.

**INITIAL STUDY with Proposed Mitigated Negative Declaration/
ENVIRONMENTAL ASSESSMENT**

Submitted Pursuant to: (State) Division 13, California Public Resources Code
(Federal) 42 USC 4332(2)(C)

THE STATE OF CALIFORNIA
Department of Transportation

7-31-09
Date of Approval


BIJAN SARTIPI
District Director
California Department of Transportation

PROPOSED MITIGATED NEGATIVE DECLARATION

Pursuant to: Division 13, Public Resources Code

Project Description

The California Department of Transportation (the Department) proposes to widen Interstate 580 in Alameda County to provide a truck-climbing lane in the eastbound direction over the Altamont Pass from the Greenville Road interchange in the City of Livermore to approximately one mile east of the North Flynn Road interchange in unincorporated Alameda County. Interstate 580 would be widened on the outside to accommodate the addition of the truck climbing lane. The proposed project also includes constructing three upslope retaining walls with a total length of approximately 3,040 feet, and addressing rock fall areas adjacent to the Altamont Sidehill Viaduct.

Determination

This proposed Mitigated Negative Declaration (MND) is included to give notice to interested agencies and the public that it is the Department's intent to adopt an MND for this project. This does not mean that the Department's decision regarding the project is final. This MND is subject to modification based on comments received by interested agencies and the public.

The Department has prepared an Initial Study for this project, and pending public review, expects to determine from this study that the proposed project would not have a significant effect on the environment for the following reasons:

The proposed project would have no effect on air quality, land use, growth, floodplains, housing, noise, cultural resources, public services, utilities and service systems, geological, agricultural or recreational resources.

The proposed project would have no significantly adverse effect on biological or visual resources because the following mitigation measures would reduce potential effects to insignificance:

- Restore a permanently affected wetland.
- Provide replacement habitat for state and federally endangered species and species of concern.

BIJAN SARTIPI
District Director
District 4
California Department of Transportation

Date

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Chapter 1 – Proposed Project

1.1 Introduction

The Department of Transportation (Department) proposes to construct a truck climbing lane in the eastbound direction of Interstate 580 (I-580) over the Altamont Pass from the Greenville Road interchange in the City of Livermore to approximately one mile east of the North Flynn Road interchange in unincorporated Alameda County. The total length of the project is 3.3 miles. The proposed project would improve highway safety and operations by separating slow moving truck traffic from the mixed-flow lane traffic and thereby reduce traffic congestion and recurring delays since slow moving trucks are less likely to merge into mixed-flow lanes. Figure 1 shows the Project Location Map. Construction of the project is scheduled to commence February 2012 and conclude February 2014.

This project is 100 percent funded from the State Highway Operation and Protection Program (SHOPP) portion of the Proposition 1B's 2006 Trade Corridors Improvement Fund (TCIF), which provides for "infrastructure improvements along federally designated "Trade Corridors of National Significance" in this state or along other corridors within this state that have a high volume of freight movement. " (Government Code 8879.23 (c)(1)(A)). On April 10, 2008, the California Transportation Commission (CTC) programmed the TCIF, which included the I-580 Eastbound Truck Climbing Lane Project. The TCIF Fund Project Baseline Agreement for this project was signed on August 29, 2008.

Transportation 2035 Plan (T2035), adopted by the Metropolitan Transportation Commission (MTC) on April 22, 2009, is also referred to as the 2005 Regional Transportation Plan (RTP) and is an update to T2030. The I-580 eastbound truck climbing lane project (MTC Project Reference Number 22013, \$64.2 million) is included in both the T2030 and T2035, and is also included in the latest 2009 Transportation Improvement Program (TIP) amendment #09-06 (I.D. ALA090028).

1.2 Purpose

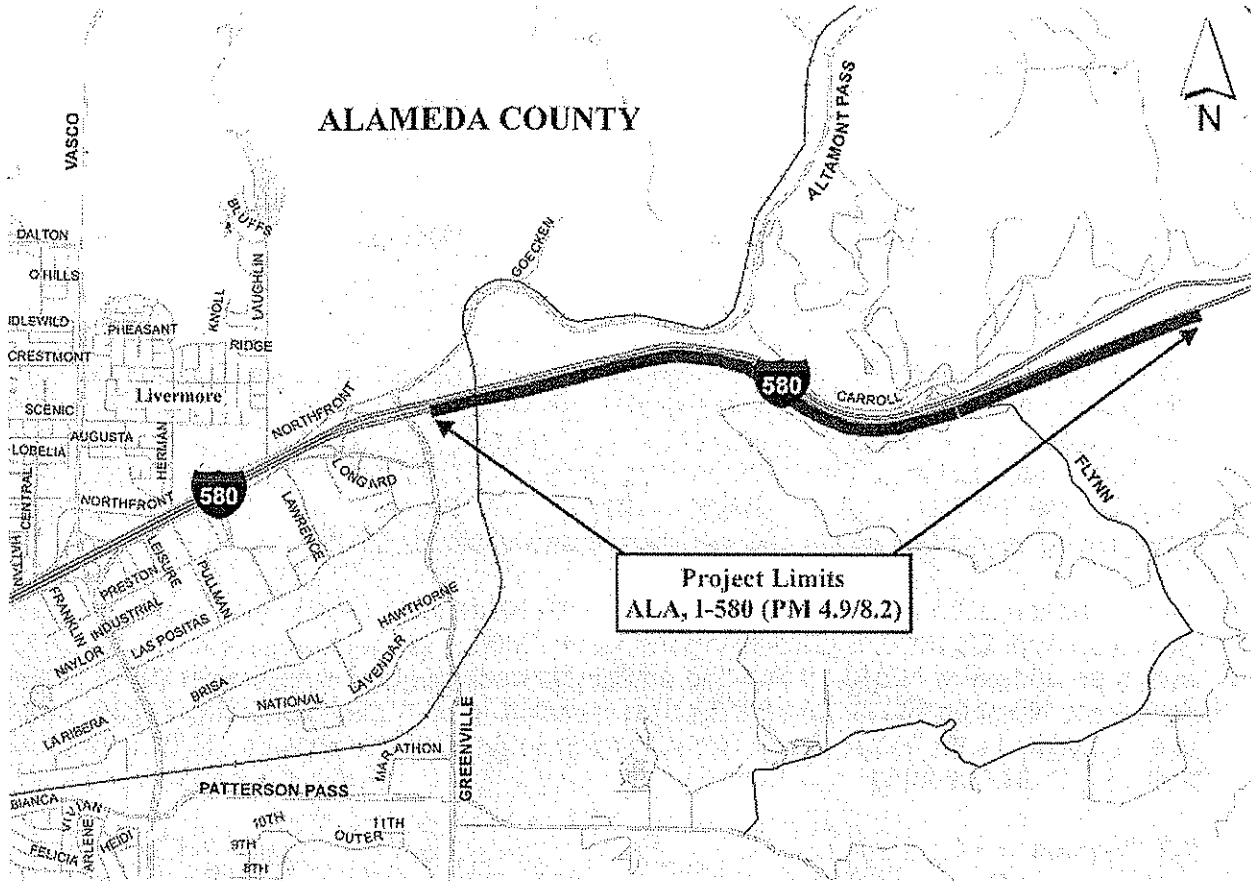
The purpose of this project is to enhance the movement of goods by improving traffic operations, reducing congestion and delay, and reducing accidents on eastbound Interstate 580 from the San Francisco Bay Area to the Central Valley.

1.3 Need

Interstate 580 (I-580) is the main east-west interregional freeway connecting the San Francisco Bay Area Interstates 80, 680, 880, US 101 and the Central Valley Interstates 5 (I-5) and 205 (I-205). It serves as an important transportation corridor providing a commute route between major cities of San Francisco, Oakland, San Jose, and Livermore to the west, and Tracy, Stockton and Modesto in the Central Valley to the east. As a major route for freight, agricultural products, and recreation between the Bay Area, Central Valley, and Southern California, there has been increased traffic demand and congestion resulting in increased delays and accidents, which need to be addressed.

I-580 is an access-controlled freeway beginning at I-5 southwest of the community of Vernalis and ending at US 101 in San Rafael. South of I-205 in Alameda and San Joaquin Counties, I-580 is a four-lane freeway, and west of I-205 to Livermore, I-580 is an eight-lane divided freeway. An auxiliary lane traverses eastbound I-580 between the Vasco Road on-ramp and a truck scale, and between the truck scale and the Greenville Road off-ramp in

Figure 1



the City of Livermore. Paved and signed brake check areas are provided between the North Flynn Road on- and off-ramps, parallel to the mainline in both directions. The existing posted speed limit is 55 miles per hour (mph) for trucks and automobiles with towed vehicles, and 65 mph for all other vehicles.

I-580 is classified as a rural freeway within the project vicinity. The project area generally consists of rolling, mountainous terrain ranging in elevation from approximately 560 feet above mean sea level (MSL) near Greenville Road to the hilltops at approximately 1,300 feet above MSL. There is an uphill profile grade between the Greenville Road and North Flynn Road interchanges. This grade is initially four percent eastward, and decreases to about three percent at approximately half way up the grade. The freeway crests at Altamont Summit at an elevation of 1,009 feet near the North Flynn Road interchange. Beyond the interchange, I-580 has a downhill five percent profile grade eastward to the Grant Line Road interchange and the Alameda/San Joaquin county line.

The Greenville Road and North Flynn Road interchanges are the two full interchanges within the project limits. Between the interchanges are standard, mixed-flow 12-foot lanes and standard 10-foot outside shoulders. The existing inside shoulder width varies from 8 feet to 10 feet.

In general, the western portion of the project area has a narrower median width compared to the remaining eastern portion. Inside shoulders of the eastbound and westbound lanes are directly adjacent to each other and are separated by either a double three-beam guard rail or a Type 50 concrete barrier in the median. The rest of the median within the project limits ranges from 22 feet to approximately 900 feet wide.

The roadway alignments are placed on the side of the hill, with one side in cut, the other side on fill. The side-slopes both west and east of the summit are typically in cut. Some cuts slopes exceed 1:1 (Horizontal:Vertical) ratio where rocky soil conditions permit, and some of these steep cut slopes experience rock falls.

A distressed section of pavement on the inside median/shoulder area stretches from North Flynn Road on-ramp to the east end of the project. This portion of distressed pavement is discussed in the Distressed Median Slope Repair section.

Existing land use within the project limits is either agricultural or open space. Land uses are primarily commercial west of the project limits, and agricultural east of the project limits.

Table 1 summarizes the structures within the project limits.

Table 1: Bridges and Crossings

Name	Post Mile	Bridge Number	Construction Date	Type
North Flynn Road OC	R5.93	33-0407	1969	Concrete box girder, four span
Altamont Sidehill Viaduct	R6.92	33-0406	1969	Prestressed concrete girder, 18 spans
Greenville Road OH	R8.00	33-0121 L	1969	Concrete box girder, six spans
Greenville Road UC	R8.29	33-0026 L	1969	Concrete box girder, three span

Note: OC – Overcrossing, UC – Undercrossing, OH – Overhead.

I-580 is part of the California Interstate Highway System. In the project vicinity, I-580 is designated as being within the Federal Motor Carrier Safety Administration's National Network (NN) for truck travel. Trucks classified as Surface Transportation Assistance Act (STAA) trucks are allowed on the NN. I-580 is not on the "Extra Legal Load Network" (ELLN) within the project limit.

I-580 is part of the Federal National Highway System (NHS) that consists of roads that are of importance to the nation's economy, defense and mobility. It is classified as a "Lifeline Route," facilitating movement between major staging areas and impacted areas following major disasters. Within the project limits, I-580 is part of the Federal Highway Administration (FHWA) and US Department of Defense's 42,000 kilometer (km) Priority Network, a subset of the Interstate Highway System that would meet the most urgent national defense needs. I-580 also is the main access to the Homeland Security Organization at the Lawrence Livermore National Laboratory in Livermore.

In 1985, the 20-year Route Concept Report (RCR) identified the route concept for I-580 (Segment A Alameda County PM 0.07 to R8.27) as an 8-lane freeway. In July 2002, the District Office of System and Regional Planning developed a draft Transportation Corridor Concept Report (TCCR). Within the project limits, I-580 is divided as Segments A and B in the draft TCCR. Segment A (North Flynn Road Interchange to Junction I-580/I-205) concept configuration (2025) is an 11-lane freeway with two high occupancy vehicle (HOV) lanes and one truck climbing lane. Segment B (Vasco Road to North Flynn Road interchanges) concept configuration (2025) is a 10-lane freeway with two HOV lanes. The average daily traffic (ADT) growth as forecasted by MTC BAYCAST 2000 model from 2000 to 2020 is 60%. The Build Alternative of this project would add the needed capacity to fulfill the route concept. However, the lane definition would have to be modified.

The *California Goods Movement Action Plan* (GMAP), released in January 2007, outlined a comprehensive strategy to address the economic and environmental issues associated with moving goods via the state's highways, railways and ports. Developed by a cabinet-level working group, the GMAP incorporated inputs from various stakeholders. They include the logistics industry, local and regional governments, neighboring communities, business, labor, environmental groups and other interested parties. The GMAP identifies candidate projects for consideration in the CTC's allocation of the \$2 billion for infrastructure investment. The I-580 Eastbound Truck Climbing Lane Project was identified in the GMAP as a candidate of Intermediate-Term Actions (4-10 years) Infrastructure Project that improves velocity and safety. The *I-580 East Corridor System Management Plan* (CSMP) is currently under development. The CSMP is expected to be adopted later in 2009.

Regionally, I-580 is legislatively designated as part of the Interregional Road System (IRRS) and is a priority corridor in the Global Gateways Development Program. As an Interstate, it is automatically specified as a High Emphasis Route (HER) in the IRRS. HERs are IRRS routes of increasing importance to region-to-region travel as well as State to-and-through movement of people and goods. I-580 is also included by the State as an Intermodal Corridor of Economic Significance (ICES), denoting its critical nature to the movement of freight.

As part of its Capital Investment Program, the Alameda County Congestion Management Agency (ACCMA)'s *2008 Countywide Transportation Plan* designated the I-580 Eastbound Truck Climbing Lane Project as a Tier 3 State Bond Investment Candidate for Proposition 1B's TCIF funding.

The *2007 All Traffic Volumes on California State Highway System* indicates that the Annual Average Daily Traffic (AADT) volumes on I-580 from North Flynn Road (PM R5.98) to Greenville Road (PM R8.27) is 144,000 vehicles, and the peak hour volume is 9,700 vehicles. More detailed information is found in the Traffic and Transportation section of this document.

The San Francisco Bay Area is heavily vested in the growing international and domestic trade, as well as local distribution of overseas and domestic products. Tens of billions of dollars worth of cargos that depart from and arrive at Bay Area seaports and airports demonstrate the scale of the activities. A substantial share of the Bay Area domestic trade is with Southern California, the Central Valley and other west coast destinations. The Interstate 580 corridor plays a key role in connecting these trade regions together. Trucks account for 10.4% of the vehicle traffic on I-580 within the project limit. The high volume of truck traffic using I-580 through the Altamont Pass indicates this corridor is an important component of the State and the Bay Area economies.

Rapid development in Alameda County and the Central Valley has resulted in an increase of interregional traffic in recent years. Traffic delays have steadily worsened along the I-580 corridor over the past decade. I-580 currently experiences serious congestion while carrying substantial traffic volume through the project limits during peak morning and afternoon hours. Existing congestion is attributed to heavy commuter traffic mixing with slow moving truck traffic during weekdays.

Long-range projections indicate an increase in person trips along this freeway section associated with the continuing development along the freeway corridor and in the Central Valley. Travel demands and urban growth projections indicate that if no improvements were made, unacceptable levels of service would extend for longer periods of time, over longer segments during peak travel periods.

Studies of the existing traffic operation for this section of the eastbound I-580 reveal:

During the AM peak period, from about 0.5 miles east of the Greenville Road on-ramp to the North Flynn Road off-ramp, truck speeds are reduced due to the uphill grade of the road. Sample truck speeds in October and November 2007 suggest that the average truck speed is approximately 52 miles per hour (mph) in Lane 3 (samples ranged from 37 to 60 mph) and 48 mph in Lane 4 (samples ranged from 35 to 60 mph) on the uphill grade.

During the PM peak period there is a bottleneck directly related to the slope of the vertical curve that starts at the Greenville Road interchange. During the PM peak hour this bottleneck merges into the upstream bottleneck and becomes one congested section about 1.3 miles long, from west of Vasco Road to about 0.5 miles east of the Greenville Road on-ramp. All four lanes are congested. Lanes 1 and 2 are used by mixed-flow traffic. Trucks generally remain in Lanes 3 and 4, with the slower trucks in Lane 4. The average speed of the trucks in Lanes 3 and 4 between Greenville Road on-ramp and North Flynn Road off-ramp are about 48 mph (samples ranged from 21 to 65 mph) and 41 mph (samples ranged from 15 to 51 mph), respectively. Slow trucks merging into mainline traffic from the North Flynn Road on-ramp causes minor, intermittent congestion problems on Lane 4 in the vicinity of the North Flynn Road interchange.

Studies of the forecasted traffic operation reveal that forecasted freeway traffic demand is to increase by about 55% to 65% during the 2035 PM peak hour. Analysis indicates that even constrained demand traffic is much higher than the capacity of the project study area. More detailed information is located in the Traffic and Transportation section of this document.

There is a critical need to reduce recurring existing and projected freeway congestion and to ensure reasonable mobility for the trucking industry. Improving the capacity and reducing the number of potential accidents, especially between automobiles and relatively slow moving trucks, can alleviate freeway congestion on Interstate 580. Motor vehicles are the greatest cause of ozone production in the San Francisco Bay Area, particularly during the summer. During the winter, automobile use increases the carbon monoxide (CO) levels in an area where there is no designation for CO levels.

The Livermore Valley, which is a major residential and employment center immediately to the west of the project, is downwind of several major freeways and industrial areas. Exacerbating the situation are the mountains that surround and form the Livermore Valley basin that tend to trap pollutants. Given the perfect summer or winter conditions, vehicle emissions and other activities create unhealthy air that often exceeds the United States Environmental Protection Agency (USEPA) standards. Idling or slow moving vehicles during peak hour use through the project area contributes to this problem. Vehicle Miles of Travel (VMT) are currently near 104,609 miles for 2,451 of Vehicle Hours Traveled (VHT) during the peak hour.

The addition of a truck climbing lane would encourage the separation of traffic weaving movements by slower-moving vehicles away from mixed-flow vehicles and lanes. The separation would translate into reduction in recurrent traffic congestion and delay during PM peak period, reduction in conflicts between slower-moving vehicles and faster vehicles using the inside lanes. The congestion-related (rear-end) and weaving-related accidents (side swipe) would be reduced. By reducing the numbers of automobiles and slower trucks accelerating and braking in uphill traffic would effectively reduce the VHT and pollutant caused by congestion. This goal is particularly important during the eastbound PM peak period when air pollutants accumulate.

The Department's Traffic Accident Surveillance and Analysis System (TASAS) – Traffic System Network (TSN) developed a three year (June 1, 2005 - May 31, 2008) accident data study for eastbound Interstate 580. The compiled data covers incidents that occurred from east of North Flynn Road to the Vasco Road interchange, which is west of the project limits. Table 2 summarizes the number of accidents, calculated accident rates and average rates for a comparable California freeway facility. Tables 3, 4 and 5 show the collision primary factors, collision types, and types of movement preceding collisions, respectively.

Table 2: I-580 Eastbound Mainline Accident Rates – June 1, 2005 to May 31, 2008

Location	Number of Accidents / Significance							Accident Rate (accidents/MVM)					
								Actual			Statewide Averages		
	Total	Fatal	Inj	F+I	Multi Veh ⁴	Wet	Dark	Fatal	F+I	Total	Fatal	F+I	Total
Post Mile (PM) R4.8/R6.0 East of North Flynn Road to North Flynn Road Interchange	72	3	24	27	50	3	24	<u>0.03</u>	<u>0.27</u>	<u>0.73</u>	0.007	0.18	0.46
PM R6.0/R8.7 North Flynn Road Interchange to Greenville Rd Interchange	132	0	46	46	104	9	33	0.00	0.22	0.62	0.010	0.27	0.74
Total	204	3	73	73	154	12	57						

Note: **Bold underlined numbers** reflect higher-than-average accident rates.

Key: F+I – Fatal plus Injury; MVM – Million Vehicles Miles

Source: California Department of Transportation Traffic Accident Surveillance and Analysis System (TASAS) – Traffic System Network (TSN), 2005-2008

Table 3: I-580 Eastbound Mainline Collision Primary Factors

Primary Collision Factor	Number	Percentage
Speeding	85	41.7%
Other Violations	54	26.5%
Improper Turn	36	17.6%
Influence of Alcohol	12	5.9%
Other than Driver	8	3.9%
Follow too Close	6	2.9%
Unknown	2	1.0%
Improper Driving	1	0.5%
Total	204	

Source: California Department of Transportation Traffic Accident Surveillance and Analysis System (TASAS) – Traffic System Network (TSN), 2005-2008

Table 4: I-580 Eastbound Mainline Collision Types

Type of Collision	Number	Percentage
Rear End	94	46.1%
Hit Object	48	23.5%
Sideswipe	45	22.1%
Overturn	9	4.4%
Other	5	2.5%
Broadside	3	1.5%
Total	204	

Source: California Department of Transportation Traffic Accident Surveillance and Analysis System (TASAS) – Traffic System Network (TSN), 2005-2008

Table 5: I-580 Eastbound Mainline – Movement Preceding Collisions Types

Movement Type	Number	Percentage*
Proceed Straight	150	73.5%
Slowing, Stopping	48	23.5%
Changing Lanes	41	20.1%
Other	34	16.7%
Stopped	33	16.2%
Various others	21	10.5%

Note: * Vehicles may have more than one type of movement preceding collisions.

Source: California Department of Transportation Traffic Accident Surveillance and Analysis System (TASAS) – Traffic System Network (TSN), 2005-2008

The majority of the accidents were rear-end type collisions and occurred due to speeding during congested conditions. The freeway capacity would be increased with the addition of a truck climbing lane as proposed by this project. The truck climbing lane would also separate weaving movements from different vehicle types. Therefore, the proposed project would help reduce congestion-related accidents on the mainline.

1.4 Project Description

The proposed project would widen I-580 to construct a truck climbing lane in the eastbound direction over the Altamont Pass from the Greenville Road interchange in the City of Livermore to one mile east of the North Flynn Road interchange in unincorporated Alameda County. It would be widened on the outside to accommodate the addition of the truck climbing lane. The proposed project will also require three upslope retaining walls for a total length of approximately 3,040 feet, and repairing rock fall areas adjacent to the Altamont Sidehill Viaduct.

The intent of the project is to provide a truck climbing lane for slow moving truck traffic separate from the mixed-flow lane traffic to improve the operation of I-580 on the uphill grade to and over the Altamont Pass. The truck climbing lane will not be exclusive to truck traffic, however, slow moving trucks would be more likely to utilize this truck climbing lane and less likely to merge into the mixed-flow lanes.

The purpose of this project is to enhance the movement of goods by improving traffic operations, reducing congestion and delay, and reducing accidents on eastbound Interstate 580 from the San Francisco Bay Area to the Central Valley.

1.5 Alternatives

The alternatives for this project are the Build Alternative and the No Build Alternative.

Proposed Build Alternative

This project is programmed and funded 100% under the Proposition 1B TCIF. The estimated project cost is \$64.265 million. All work for the proposed Build Alternative is to be within existing I-580 right of way (ROW).

The new truck climbing lane (Lane 5) will begin at the Greenville Road Undercrossing, continue beyond the Altamont Pass summit at North Flynn Road, and merge with the existing Lane 4 about 3,200 feet downstream of the North Flynn Road eastbound on-ramp to I-580. This configuration would provide additional distance for the North Flynn Road on-ramp traffic, which is comprised mainly of trucks, to accelerate and merge onto freeway mainline. The North Flynn Road on-ramp will be realigned in order to merge with the widened mainline.

The mainline widening can be divided into three sections as delineated on the Preliminary Project Plans (Appendix F):

West End, or Section I ("AE Line" on plan sheets L-1 through L-6): Widen two feet on the inside shoulder and twelve feet on the outside to provide a standard 80 feet wide paved road (five 12-foot lanes with 10-foot shoulders). The structural section will be full depth across the widened traveled way and the shoulders.

Middle, or Section II ("A Line" on plan sheets L-7 through L-10): Widen to a minimum of 12-foot on the outside shoulder to provide an 80 feet wide paved road. The existing inside shoulder is ten feet. Additional widening for sight distance is required at a right turn horizontal curve within this section. The structural section will be full depth across the widened road including the outside shoulder.

East End, or Section III ("AE Line" on plan sheets L-11 through L-14): Widen to a minimum of 14-foot on the outside shoulder to provide an 80 feet wide paved road. The existing inside shoulder is eight feet. The structural section will be full depth across the widened road including the outside shoulder. The inside shoulder rehabilitation within this section will be subject to the repair strategy discussed below in the Distressed Median Slope Repair section.

The Build Alternative would widen the existing I-580 eastbound freeway section on the outside to a minimum width of 22 feet from the existing edge of traveled way. This minimum width would allow construction of the new 12-foot lane and 10-foot shoulder. The Build Alternative would also upgrade the existing 8-foot inside shoulder at various locations to a standard 10-foot except at two bridge locations, the Greenville Road Undercrossing (Br. No. 33-0026L) and the Greenville Road Overhead (Br. No. 33-0121L).

In addition, the Build Alternative includes providing a full structural depth across the traveled way and the shoulders except on the inside shoulder in the distressed median slope area east of North Flynn Road Interchange. The damaged PCC (Portland cement concrete) slab would be replaced as required for the widening.

Retaining walls are proposed at locations where cut slopes exceed 2:1 (H:V) ratio. In general, the slopes are close to 1:1 at the proposed locations and walls are likely to be soil nail type. The three retaining wall locations and average heights are shown below and delineated on the Preliminary Project Plans (Appendix F).

Retaining wall #	Length (Feet)	Average Height (Feet)
2	700	29
3	1,980	8
4	360	9

Wall #2 (plan sheet L-7) is located east of Greenville Road and west of North Flynn Road. wall #3 (plan sheets L-12, L-13) is located east of North Flynn Road and west of wall #4, (plan sheet L-14) which is located east of wall #3.

Rock slope protection (RSP) is proposed along areas near the Altamont Sidehill Viaduct between Greenville Road and North Flynn Road (see plan sheet L-7). Rock falls from the steep high cut slopes above currently accumulate in a catchment area constructed at the base of the existing roadway along the southern shoulder of eastbound I-580. This catchment area will be removed during the construction of the road widening, and anchored wire mesh and drapery netting has been recommended to address the rock fall issue.

Other proposed improvements include constructing three overhead sign structures (truss) throughout the project, and removing the existing two overhead sign structures. Also proposed is the removal of the existing thrie-beam barrier located between Greenville Road and North Flynn Road and replacing it with a Type 60A (modified) concrete barrier.

The reconstruction, modification and upgrade of drainage facilities includes hydro-modification measures and repairs to the existing drainage culverts such as replacing or extending inlets and outlets.

The proposed project to widen the highway would involve earthwork grading operations, which would remove existing highway planting and non-native grasslands on existing embankments and cut slopes. It is the Department's policy to replace highway planting that is damaged or removed by State highway construction activities. Planting and irrigation systems shall be designated to achieve a balance between safety, maintainability, aesthetics, cost effectiveness, and resource and water conservation. Within the project limits, replacement planting will be compatible with adjacent rural environment and enhance the visual quality of the corridor. Trees, shrubs, and groundcover species will be selected for their drought tolerance and disease characteristics. More information regarding this can be found in the Visual/Aesthetics section of this document.

The proposed truck climbing lane crosses the Union Pacific Railroad at the Greenville Road Overhead (Br. No. 33-0121L and R), however, no construction will occur on this structure, and this project would not affect railroad operations.

There is no Park and Ride facility within project limits, nor is one proposed as part of this project.

Distressed Median Slope Repair Area

The repair of the distressed median slope that stretches from the North Flynn Road on-ramp to the east end of the project is proposed as a separate and independent project.

Temporary repair was recommended as an immediate fix. It would include hot mix asphalt (HMA) overlay to smooth out the distressed shoulder and pavement.

The truck climbing lane project would undertake interim repair work for this area. It would include:

- HMA overlay on the existing shoulder
- Replacement of damaged PCC slab

- Construction of underdrains on outside shoulder to control ground water level
- Reconstruction of metal beam guard railings in the vicinity of the distressed median slope/area

The Department's Headquarters Design Branch is conducting an advanced planning study on the ultimate repair work, which would include:

- Construction of a tie-back wall, estimated to be over 3,000 feet long and 50 feet in depth
- Installation of new horizontal drains, to be placed in 20-foot spacing and at least 50 feet behind the face of the wall
- Grouting the voids below the pavement base, estimated to be over 12,000 cubic feet in volume

Since the ultimate repair would be considered storm damage-related, it would thus exceed the scope of the TCIF funding. The Department would propose an amendment to include the distressed median slope repair work in the 2008 SHOPP Program (under the 201.131 Emergency Response [Permanent Restoration] category). If funding were made available, the distressed median slope repair work would be combined with this truck climbing lane project during this project's design phase.

No Build (No Action) Alternative

Studies of the forecasted traffic operation reveal that if no improvements were proposed, a freeway traffic bottleneck would occur on the freeway upgrade between the Greenville Road and North Flynn Road interchanges in PM peak period. In 2015, this bottleneck would cause six to eight minutes of delay to freeway traffic. In 2035, this bottleneck would cause severe traffic congestion and long vehicle delays for seven hours.

The No Build Alternative compares project conditions if the proposed improvements are not constructed. The No Build Alternative would not change the present roadway geometrics.

Alternatives Considered but Eliminated from Further Discussion

The Build Alternative and No Build Alternative are the only alternatives for this project and no other alternatives were considered.

1.6 Other Proposed Actions in the Project Vicinity

The Alameda County Congestion Management Agency (ACCMA), in cooperation with the Department, is sponsoring a project to add a westbound High Occupancy Vehicle (HOV) lane on I-580 from the Greenville Road interchange to the San Ramon Road/Foothill Road interchange. The Environmental Document is scheduled for completion in November 2009 and construction is scheduled to commence in 2011.

The ACCMA, in cooperation with the Department, is also sponsoring the eastbound HOV lane along I-580 from the Hacienda Drive interchange to the Greenville Road interchange. Construction of the project began in September 2008.

1.7 Permits and Approvals Needed

The following permits, reviews, and approvals specific to this project will be required for project construction:

Agency	Permit/Approval	Status
United States Fish and Wildlife Service (USFWS)	Section 7 Consultation for Threatened and Endangered Species Biological Opinion (BO)	Biological Assessment (BA) to USFWS pending
United States Army Corps of Engineers (USACE)	Section 404 Permit for placement of fill in waters of the United States	Application pending
California Department of Fish and Game (CDFG) *	Scientific Collecting Permit Memorandum of Understanding for take	Application pending
State Water Resources Control Board (SWRCB)	Section 401 Water Quality Certification	Application pending
California Department of Toxic Substances Control (California Environmental Protection Agency)	Approval of voluntary clean-up agreement, transportation plan, soil management plan, and health and safety plan for construction operations	Application pending

Chapter 2 –Affected Environment, Environmental Consequences, and Avoidance, Minimization and/or Mitigation Measures

The analyses discussed are based on supporting technical studies and other reference materials not attached to this document. They are available for examination and copying at the following address: California Department of Transportation, District 4, Office of Environmental Analysis, 111 Grand Avenue, Oakland California, 94623-0660.

As part of the scoping and environmental analysis conducted for the project, the following environmental issues were considered but no adverse impacts were identified. Consequently, there is no further discussion regarding these issues in this document.

- *Community Character and Cohesion* – The proposed project will not alter the character or cohesiveness of existing neighborhoods or communities. The project will be constructed within existing ROW.
- *Consistency with State, Regional and Local Plans and Programs* – The proposed project is consistent with state, regional and local plans and programs, as well as transportation plans and programs.
- *Environmental Justice* – There are no impacts concentrated in any area of minority or low-income residents. The project would not cause adverse effects on any minority or low-income populations.
- *Existing and Future Land Use* – The project does not affect existing or future land uses. No acquisition of residential or commercial structures is anticipated, and the project will not alter community interaction patterns.
- *Farmlands and Timberlands* – There are farmlands within the project vicinity, but no ROW will be acquired for this project and consequently no farmlands will be affected. There are no timberlands within the project vicinity.
- *Floodplain* - The project is not located within a base 100-year floodplain and therefore need not be studied or addressed further.
- *Growth* – Although this project can be considered capacity increasing, it only proposes to add a truck climbing lane in the eastbound direction of I-580, on the uphill grade from the Greenville Road interchange to the Altamont Pass (North Flynn Road interchange). The purpose of this project is to enhance the movement of goods by improving the efficiency and operation of truck traffic traversing this uphill grade. The truck climbing lane will end by merging into the existing mainline approximately one mile east of the Altamont Pass and therefore, accessibility to local communities will not be enhanced. For these reasons, project-related growth is not reasonably foreseeable.
- *Mineral Resources* – There are no mining resources within the project vicinity.
- *Noise* – The Traffic Noise Study Report concludes that the noise level would not approach the noise abatement criteria in 23 CFR 772, and there would be no substantial noise increases over the existing levels. Therefore, traffic noise impacts are not predicted to occur anywhere within the project area. Construction noise would be short-term, intermittent, and masked by local traffic noise. Other efforts to minimize these

temporary noise effects are discussed in Appendix C - Minimization and Mitigation Summary. It is not anticipated that a noise barrier will be required at any location within the limits of the proposed project.

- *Paleontology* – The project will not affect paleontological resources.
- *Parks and Recreation* – There are no parks or recreation facilities in the project area.
- *Relocation Assistance Program* – All work is anticipated to be within existing highway ROW. No relocation will be required as a result of this project.
- *Section 4(f), U.S. Department of Transportation (USDOT) Act* - No Section 4(f) properties were identified within the project limits.
- *Utilities/Emergency Services* – There is no anticipated relocation of any publicly owned utility facility. Potholing of utility facilities crossing the I-580 alignment may be necessary during the design phase of the project to verify any conflicts. No effects to emergency services are anticipated.

Human Environment

2.1 TRAFFIC AND TRANSPORTATION/PEDESTRIAN AND BICYCLE FACILITIES

Affected Environment

A Highway Operational Report, completed for this project in March 2009, provides greater detail of the assumptions, analyses and conclusions summarized in this section.

I-580 is an access controlled interstate freeway and does not accommodate pedestrians or bicycles. Therefore, the discussion presented in this section is limited to traffic and transportation.

The *2007 All Traffic Volumes on California State Highway System* indicates that the Annual Average Daily Traffic (AADT) volumes on I-580 from North Flynn Road (PM R5.98) to Greenville Road (PM 8.27) is 144,000 vehicles, and the peak hour volume is 9,700 vehicles. Table 6 lists the existing peak hour, peak month, and AADT volumes within and adjacent to the project limits.

Table 6: I-580 Mainline Existing Annual Average Daily Traffic (AADT) – Both Directions

From	To	Peak Hour	Peak Month	AADT
First Street (Post Mile [PM] 10.689)	Vasco Road (PM 9.683)	12,400	191,000	182,000
Vasco Road (PM 9.683)	Greenville Road (PM R8.265)	10,400	160,000	153,000
Greenville Road (PM R8.265)	North Flynn Road (PM R5.980)	9,700	151,000	144,000
North Flynn Road (PM R5.980)	Grant Line Road (PM R1.476)	9,700	151,000	144,000
Grant Line Road (PM R1.476)	I-205/I-580 Interchange (PM 0.422)	9,600	150,000	143,000
I-205/I-580 Interchange (PM 0.422)	San Joaquin/Alameda County Line	3,700	44,000	41,000

Source: 2007 All Traffic Volumes on California State Highway System, California Department of Transportation, 2005-2007

Existing Traffic Operations

AM Peak Period

From the 1st Street interchange (west of the project limits) to the I-205/580 interchange (east of the project limits), the eastbound I-580 freeway is generally less congested in all lanes with the exception of fully loaded trucks in Lanes 3 and 4. From about 0.5 miles east of the Greenville Road on-ramp to the North Flynn Road off-ramp, truck speeds are reduced due to the uphill grade of the road. Sample truck speeds observed in October/November 2007 suggest that the average truck speed is approximately 52 mph in Lane 3 (samples ranged from 37 mph to 60 mph) and 48 mph in Lane 4 (samples ranged from 35 to 60 mph) on the uphill grade. Attachment 1 of the District Highway Operational Report contains more detailed information regarding existing eastbound I-580 traffic volume during the AM peak period.

PM Peak Period

Several bottlenecks developed during this period between the 1st Street interchange and the I-205/580 interchange. Two bottlenecks, for example, cause traffic congestion between the 1st Street and Greenville Road interchanges. The first bottleneck is related to heavy traffic exiting and entering I-580 at Vasco Road. The second bottleneck is directly related to the slope of the vertical curve that starts at the Greenville Road interchange. During the peak hour these two bottlenecks merge and become one congested section about 1.3 miles long from west of Vasco Road to about 0.5 miles east of the Greenville Road on-ramp. All four lanes are congested and field observations indicated that Lanes 1 and 2 are used by mixed-flow traffic. Trucks generally remain in Lanes 3 and 4 with slower trucks in Lane 4. This traffic pattern reduces freeway capacity due to the regular intervals of space created between platoons of trucks. The average speed of the trucks in Lane 3 and Lane 4 between the Greenville Road on-ramp and North Flynn Road off-ramp are about 48 mph (samples ranged from 21 mph to 65 mph) and 41 mph (samples ranged from 15 mph to 51 mph), respectively.

Slow trucks merging into mainline traffic from the North Flynn Road on-ramp cause a minor, intermittent congestion problem in Lane 4 at the vicinity of the North Flynn Road

interchange. Traffic entering and exiting I-580 at the Grant Line Road interchange and the minor traffic bottleneck downstream of the I-580 exit to I-205 are two additional congested areas located east of the project limits. Attachment 1 of the District Highway Operational Report contains more detailed information regarding existing eastbound I-580 traffic volume during the AM peak period.

Environmental Consequences

The Department's Office of Highway Operations has compiled operational analyses of year 2015 and 2035 traffic operations on eastbound I-580 from west of the Greenville Road interchange to east of the North Flynn Road interchange. The forecasts show year 2015 and 2035 AM and PM peak hour traffic volumes on eastbound I-580 from west of the Greenville Road interchange to east of the North Flynn Road interchange, plus on- and off-ramp volumes for the ramps at the Greenville Road and North Flynn Road interchanges.

A comparison of existing and forecast traffic volumes shows that a substantial increase in traffic demand is expected on this section of eastbound I-580 by 2035. Traffic volumes will more than double during the AM peak hour in 2035. However, 2035 forecast traffic volumes on I-580 will not reach the existing PM peak hour if traffic growth occurs as forecast. Freeway traffic demand is forecast to increase by about 55% to 65% during the PM peak hour. Eastbound I-580 cannot accommodate these forecast demand volumes particularly in 2035, and a traffic bottleneck will develop in the project vicinity under the Build Alternative. The situation will not be as serious in 2015. However, the Department's analysis indicates that a traffic bottleneck will develop in the study area in the No Build Alternative, and I-580 will probably be operating at capacity in the Build Alternative. Details are as follows:

Year 2015 Peak Hour Traffic Operations

AM Peak Hour

No traffic problems are anticipated during the AM peak hour in the project vicinity if traffic growth occurs as projected. Forecasted traffic volumes on EB I-580 range from about 3,900 to 4,500 vehicles per hour, substantially lower than the PM peak hour volumes that already exist on this freeway. Attachment 2 of the Highway Operational Report shows existing and forecast AM peak hour traffic volumes and estimated auto and truck speeds on three sections of the freeway.

PM Peak Hour – No Build Alternative

The Department's analysis indicates that a traffic bottleneck will develop on the freeway grade between the Greenville Road and North Flynn Road interchanges, where the grade is 4+ percent. Traffic will back up on eastbound I-580 and on the Greenville Road on-ramp as a result of this bottleneck. On I-580, the average vehicle delay could increase by about six to eight minutes at the end of the peak hour. Traffic congestion could extend from 1½ to over 2 miles upstream of the bottleneck. On the Greenville Road on-ramp, the average vehicle delay would theoretically increase by about twelve to fifteen minutes at the end of the peak hour. However, some on-ramp traffic will likely divert to other ramps thus reducing these theoretical delays. This analysis is restricted to the peak hour only. However, it is estimated that traffic congestion will probably last for at least two hours during the PM peak period. Attachment 3 of the Highway Operational Report shows existing and year 2015 PM peak hour traffic volumes and estimated vehicle speeds in the project vicinity.

PM Peak Hour – Build Alternative

In the Build Alternative, traffic will be operating at or near capacity in the four-lane section of I-580 east of the North Flynn Road on-ramp. The Department's analysis indicates that the demand traffic in this section of eastbound I-580 is slightly over the roadway's capacity. If traffic develops as analyzed, stop-and-go "shock waves" will certainly occur, and a short vehicle queue may develop. However, conditions will vary from day to day, and traffic backups may or may not occur on individual days. Attachment 3 of the Highway Operational Report shows existing and year 2015 PM peak hour traffic volumes and estimated vehicle speeds in the project vicinity.

Year 2035 Peak Hour Traffic Operations

AM Peak Hour

Year 2035 AM peak hour traffic is about the same as existing PM peak hour traffic volumes (about 7,500 to 7,900) on eastbound I-580 in the project vicinity. However, truck traffic, as a percentage of total traffic, is substantially higher in the AM peak hour than in the PM peak hour. This has an adverse effect on vehicle capacity, particularly on the 4 percent upgrade between the two interchanges.

The Department's analysis indicates that the No Build Alternative will experience traffic congestion during the AM peak hour with a traffic bottleneck developing on eastbound I-580 east of the Greenville Road interchange. The major impact of this bottleneck would be to the Greenville Road on-ramp, which would be severely congested. If traffic growth occurs as projected, the analysis indicates that on-ramp traffic would theoretically experience more than 20 to 25 minutes of delay at the end of the PM peak hour with more than 250 vehicles in queue. On the other hand, freeway traffic would probably not experience more than a few minutes of delay due to this bottleneck, and the freeway traffic backup would only be about 0.25 miles long.

Note that it is likely that some Greenville Road on-ramp traffic would divert to other routes such as the Vasco Road on-ramp, and via Altamont Pass Road to the North Flynn Road on-ramp. The theoretical vehicle delays at the Greenville Road on-ramp will therefore not be as severe as estimated. Attachment 4 of the Highway Operational Report shows existing and forecast AM peak hour traffic volumes, and estimated auto and truck speeds on three sections of freeway.

PM Peak Hour

In general, neither the Build nor No Build alternatives can accommodate the year 2035 PM peak hour traffic forecasts. Additionally, the Department's opines that the projected 2035 forecast PM peak hour traffic volumes are substantially higher than the capacity of eastbound I-580. Analysis of the traffic forecasts shows that traffic entering the project vicinity will already be constrained upstream on eastbound I-580 likely somewhere between I-680 in Pleasanton and the Vasco Road interchange. Since the study area does not extend to I-680, we are assuming that the forecast volumes would be constrained to a volume of no more than about 10,570 vehicles (4 mixed-flow lanes and one HOV lane) prior to entering this study area if forecast traffic growth was in excess of this volume. This is a generous figure (shown on Attachment 5 of the Highway Operational Report as the "Constrained Demand" traffic volumes), and outside traffic bottlenecks could constrain approach traffic even more than what is assumed. This preliminary constraint is an effort to separate the

traffic congestion specifically caused by a traffic bottleneck within the study area from congestion caused by other traffic bottlenecks. However, traffic congestion caused by a bottleneck within this study area is only a part of the overall traffic congestion that will develop on eastbound I-580 during the PM peak period if traffic growth occurs as forecast. Analysis of 2035 traffic forecasts also indicates that the constrained demand traffic is substantially higher than the capacity of the study area that it probably will not develop as forecast. Even so, it is likely that PM peak hour traffic congestion could last for four to five hours with individual vehicle delays of as high as 30 to 45 minutes in all No Build and Build alternatives for most of this period. The extent and duration of congestion will ultimately depend on how much delay motorists will be willing to tolerate in 2035. Attachment 5 of the Highway Operational Report shows existing, year 2035 demand, year 2035 "constrained demand", and year 2035 constrained traffic volumes for the PM peak hour.

PM Peak Hour – No Build Alternative

Analysis of year 2035 PM peak hour forecast traffic indicates that a traffic bottleneck will develop on the I-580 grade between the Greenville Road and North Flynn Road interchanges where the grade is 4 percent. The already constrained forecast traffic volume for this section of freeway is about 11,900, and the capacity of this upgrade is only about 8,000 (including about 950 trucks).

The 2035 forecast peak hour traffic volume for this on-ramp is about 1,930 vehicles. However, only about 800 vehicles will be able to enter the freeway. It is estimated that on-ramp vehicle delays would theoretically increase by about 80 to 90 minutes during the peak hour alone if traffic growth occurred as projected on this on-ramp. The Greenville Road on-ramp will also be congested. However, since Greenville Road on-ramp demand traffic can divert to other on-ramps, it is likely that on-ramp traffic growth will be substantially lower than projected to avoid this heavy delay. Attachment 5 of the Highway Operational Report shows demand and constrained traffic volumes for the study area.

PM Peak Hour – Build Alternative

The Department's analysis of PM peak hour traffic indicates that a traffic bottleneck will develop in the four-lane section of eastbound I-580 east of the North Flynn Road interchange. The already constrained forecast traffic volume for this section of I-580 is about 12,000, and the capacity of this section is about 8,900 including about 1,040 trucks. Likely traffic speeds on this section of freeway would probably be on the order of 35 mph to 50 mph for all vehicles. Traffic will be congested with vehicle back-ups extending from the traffic bottleneck between the Greenville Road and North Flynn Road interchanges. It is estimated that the vehicle speeds in this section of freeway would be on the order of 25 mph to 30 mph. However, vehicle speeds in queue are very unstable and could vary substantially from the values quoted here.

The Greenville Road on-ramp will be congested. The 2035 forecast peak hour traffic volume for this on-ramp is about 1,930 vehicles. However, only about 870 vehicles will be able to enter the freeway. If traffic growth occurred as projected on this on-ramp, it is estimated that on-ramp vehicle delays would theoretically increase by about 70 to 75 minutes during the peak hour alone. However, since Greenville Road on-ramp demand traffic can divert to other on-ramps, it is likely that on-ramp traffic growth will be substantially lower than projected to avoid this heavy delay.

Vehicle Speeds

Vehicle speeds in congested situations are unstable and will vary substantially for different facilities and conditions. When a section of freeway is operating at capacity, speeds vary from about 35 to 50 miles per hour in the bottleneck section. Upstream of the bottleneck, speeds are generally lower and will vary depending on many factors including the congested volume per lane. Attachments 2 through 5 of the Highway Operational Report contain detailed information regarding sample truck speeds.

Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, and/or mitigation measures have been identified as a result of existing and future traffic operations analyzed in the Highway Operational Report.

A Transportation Management Plan (TMP) will be required for this project. The TMP is a strategy that will be implemented during construction to minimize and prevent delay and inconvenience to the traveling public. The proposed construction and improvements will include temporary roadwork requiring lane closures or detouring. The TMP for this project will be developed in conjunction with the local jurisdictions, and be refined during PS&E and final design phases, and supported by detailed traffic studies to evaluate traffic operations. The need for necessary lane closures during off-peak hours or at nighttime, or short-term detour routes for ramp closures would be identified, as required.

The TMP would include press releases to give advance notice to motorists, businesses, community groups, local entities, emergency services providers, and politicians on upcoming construction activities and durations, detours, and access issues during the construction period. Various TMP elements such as portable changeable message signs and the California Highway Patrol's Construction Zone Enhanced Enforcement Program (COZEEP) would be utilized to minimize delay to the traveling public, and enhance safety.

2.2 VISUAL/AESTHETICS

Regulatory Setting

The National Environmental Policy Act of 1969 as amended (NEPA) establishes that the federal government use all practicable means to ensure all Americans safe; healthful, productive, and *aesthetically* (emphasis added) and culturally pleasing surroundings (42 U.S.C. 4331[b][2]). To further emphasize this point, the Federal Highway administration in its implementation of NEPA (23 U.S.C. 109[h]) directs that final decisions regarding projects are to be made in the best overall public interest taking into account adverse environmental impacts, including among others, the destruction or disruption of aesthetic values.

Likewise, the California Environmental Quality Act (CEQA) establishes that it is the policy of the state to take all action necessary to provide the people of the state "with...enjoyment of *aesthetic*, natural, scenic and historic environmental qualities." (CA Public Resources Code Section 21001[b])

Affected Environment

A Visual Impact Assessment (VIA) was completed for this project in May 2009.

Within the project limits, Interstate 580 (I-580) is an eligible State Scenic Highway, but has not been officially designated. Under the State Scenic Highway statutes, development of a scenic highway must incorporate "not only safety, utility, and economy but also beauty" and pleasing appearance must be a consideration in the planning and design process of a scenic highway (Sec. 261, Streets and Highway Code).

The Altamont Pass/I-580 corridor remains sparsely developed, functioning as an informal greenbelt visually dominated by largely intact hills and grassland. The entire area of hills surrounding the corridor is designated as Large Parcel Agriculture in the Alameda County East County Area Plan (ECAP), although it is also identified and best known as a Wind Resource Area. The principal land use within the Altamont Pass is the Altamont Wind Farm, which is among the largest wind farms in the world. The wind farm consists of over 4,900 wind turbines of various types and sizes. The wind turbines are a prominent and characteristic element of the landscape, occupying ridgelines both north and south of the highway in large quantities. Other uses in the project vicinity include a small portion of Altamont Pass Road, and the Altamont Commuter Express, a commuter train connecting the cities of Stockton and San Jose.

The project viewshed is defined by the steep enclosing cut slopes and hillsides of the Mountain House Creek drainage that rise above the roadway to the north and south. The western project terminus at Greenville Road marks the beginning of the pass at the eastern edge of the Livermore Valley, and broad views of the valley are visible to westbound motorists on I-580. A short distance east of Greenville Road, views are limited to the slopes of the Altamont Pass itself. The eastern project terminus is located one mile north of North Flynn Road, which marks the summit of the pass. Views of the San Joaquin Valley are visible in the distance east of the summit. Scenic views of the Livermore Valley and the Pleasanton and Sunol Ridges are visible briefly to westbound motorists on the Altamont Sidehill Viaduct roughly a mile from the western project terminus.

No recreational, residential, or other sensitive land uses are found within the project viewshed. Bethany Reservoir State Recreation Area, the only recreational destination in this portion of Alameda County, is more than 5 miles from the project limits and is outside of the project viewshed. The project viewshed is not within the sensitive viewsheds identified in the Sensitive Lands and Regionally Significant Open Space chapter of the 1994 Alameda County General Plan.

Altamont Pass/Diablo Range Landscape Unit

The project study area is limited to the Altamont Pass/Diablo Range landscape unit. Landscape units are distinctive geographic segments of the viewshed with a broad unity of landscape character and visual quality. The Livermore Valley, which adjoins the project to the west, is visible to westbound motorists from only a small portion of the project limits. The San Joaquin Valley adjoining to the east is visible in the distance from various locations within the project limits. The characterization of the project landscape in terms of visual character, visual quality, and viewer response (visual sensitivity and exposure of their viewers), provides the baseline for evaluating potential project effects.

Steep, high grassy slopes and ridges with virtually no tree cover characterize the I-580/Altamont Pass landscape. The landscape is moderately intact. Aside from the freeway itself, wind turbines form the predominant visual feature within much of this landscape, occupying ridge-tops and drawing attention by their contrast with the ridge-top skyline and relatively featureless grassland landscape. Although conspicuous, the wind turbines

interfere little with views of the underlying terrain, and the grassland landscape remains fully visible.

Landforms within the project corridor were altered substantially to accommodate the freeway and tall, steep engineered cut slopes up to 160 feet in height about the roadway through much of the pass, strongly compromising the intactness and quality of the freeway's immediate foreground view. The cut slopes have largely re-vegetated, and attractive views of intact undisturbed hillsides are occasionally visible in parts of the corridor. However, the predominant landscape within the highway's visual corridor is one of continuous highly engineered, man-made land forms of large scale that dominate the overall visual character. In addition to the prominent highway cut and fill slopes, similar grading from the historic railroad lines contribute further to the disturbed landforms in the highway's foreground viewshed.

Other existing visual intrusions include wind farm access roads and support structures, cellular telephone towers, and transmission corridors. The landscape retains a moderately high level of vividness, not only from the predominantly intact ridges and grasslands, but from the numerous wind turbines as well. The turbines generally display a simplicity of form and visual unity that is more attractive than many more visually complex or disorderly industrial features. Despite a high degree of contrast with the natural landscape, the turbines can thus be a striking, vivid feature whose effect on visual quality of the landscape is not entirely adverse. However, moderately low visual intactness and unity due to the dominance of the highly altered, engineered land forms throughout the visual foreground strongly compromises visual quality. Overall visual quality as seen by motorists on I-580 is thus considered to be moderate.

Viewer Response

Viewers within this sparsely developed landscape unit consist almost entirely of the very large numbers of motorists on I-580 traveling between the Bay Area, San Joaquin Valley, and southern California. These motorists comprise the broadest possible range of viewer types but are not considered to be highly sensitive to scenic concerns. The Altamont Pass does not contain any recreational destinations, sensitive scenic features or visually sensitive land uses. Although the area is largely undeveloped, visual quality is moderate due to the dominance of the freeway and highly altered landforms, and the landscape is not considered to be a principal concern to the motorists, mainly commuters, truckers, and inter-regional travelers, who pass through it.

Although the project segment of I-580 is a portion of an eligible scenic highway corridor, it is unclear whether the corridor would qualify for designation at this point in time. Since the time of the passage of the Scenic Highways legislation in 1963, development of the Altamont Wind Farm has taken place in the corridor and intrusion from the presence of the wind farm could potentially be considered inconsistent with the goals of a scenic highway corridor.

While visual exposure of motorists to the project features would be high, viewer sensitivity is considered to be moderately low, and overall viewer response is thus considered to be moderate.

Key Viewpoints

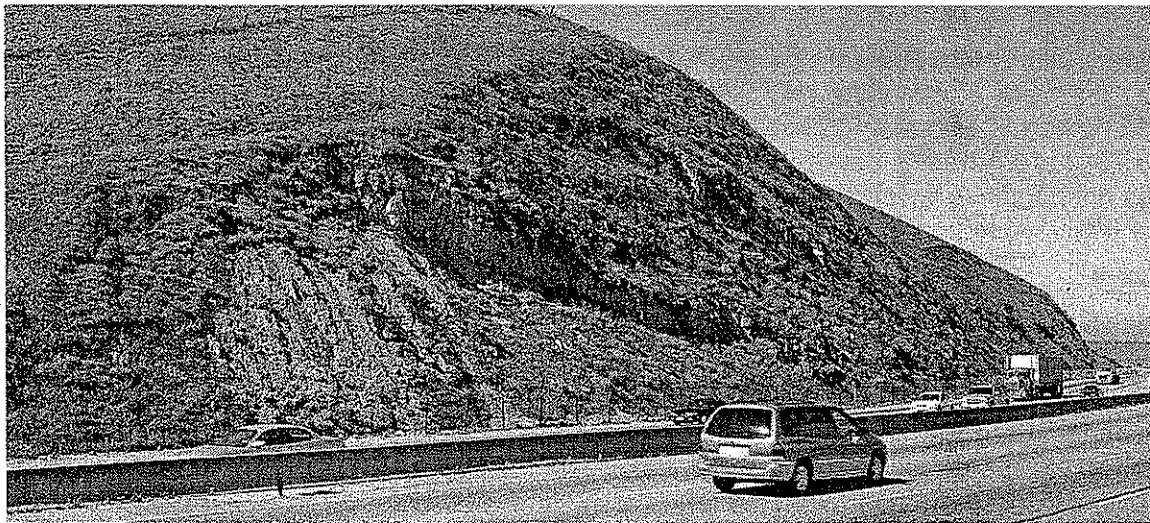
The following Key Viewpoints represent the principal public views of prominent project features. The viewpoints are grouped by major project feature as follows:

- Key Viewpoint 1 – (retaining) wall #2 and rock slope protection
- Key Viewpoints 2, 3, and 4 – wall #3
- Key Viewpoint 5 – wall #4
- Key Viewpoint 6 – distressed median slope area

The components of visual quality are vividness, intactness, and unity. The components of viewer response are viewer exposure and viewer sensitivity.

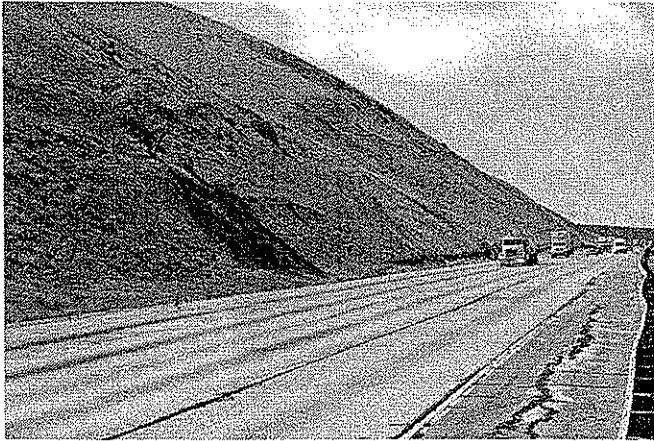
Existing visual quality of each Key Viewpoint is moderate overall. Vividness is moderate, with long views of the Livermore Valley (westbound) or San Joaquin Valley (eastbound) in the distance that are, however, generally narrow in extent and often hazy from smog. There are views of generally intact grassy hillsides in the middle ground, some with wind turbines on the ridges. Intactness and unity of the eroded existing cut slopes dominating the foreground are moderately low.

Overall viewer response is considered moderate. Viewer exposure is high, but viewer sensitivity is considered moderately low. Scenic values are not a foremost concern for the large majority of motorists, which consist predominantly of commuters and interregional travelers coming to and from I-5. There are no sensitive off-road viewers of the retaining walls or the distressed median slope area.



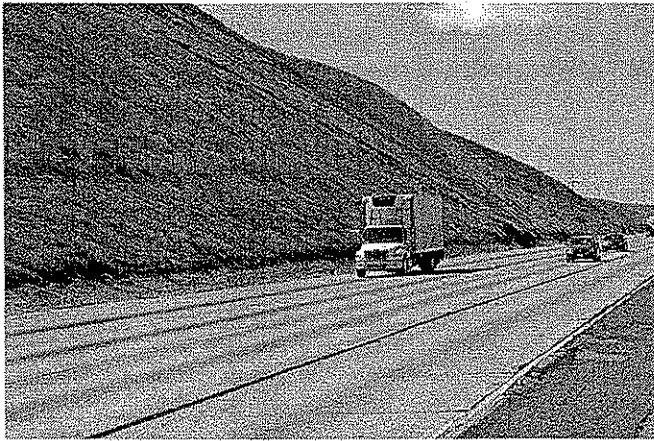
Key Viewpoint 1

Existing condition looking west toward rock falls (wall #2 and rock slope protection)



Key Viewpoint 2

Existing condition looking west (toward wall #3)



Key Viewpoint 3

Existing condition looking west (toward wall #3)



Key Viewpoint 4

Existing condition looking east (toward wall #3)



Key Viewpoint 5

Existing condition looking east (toward wall #4)



Key Viewpoint 6

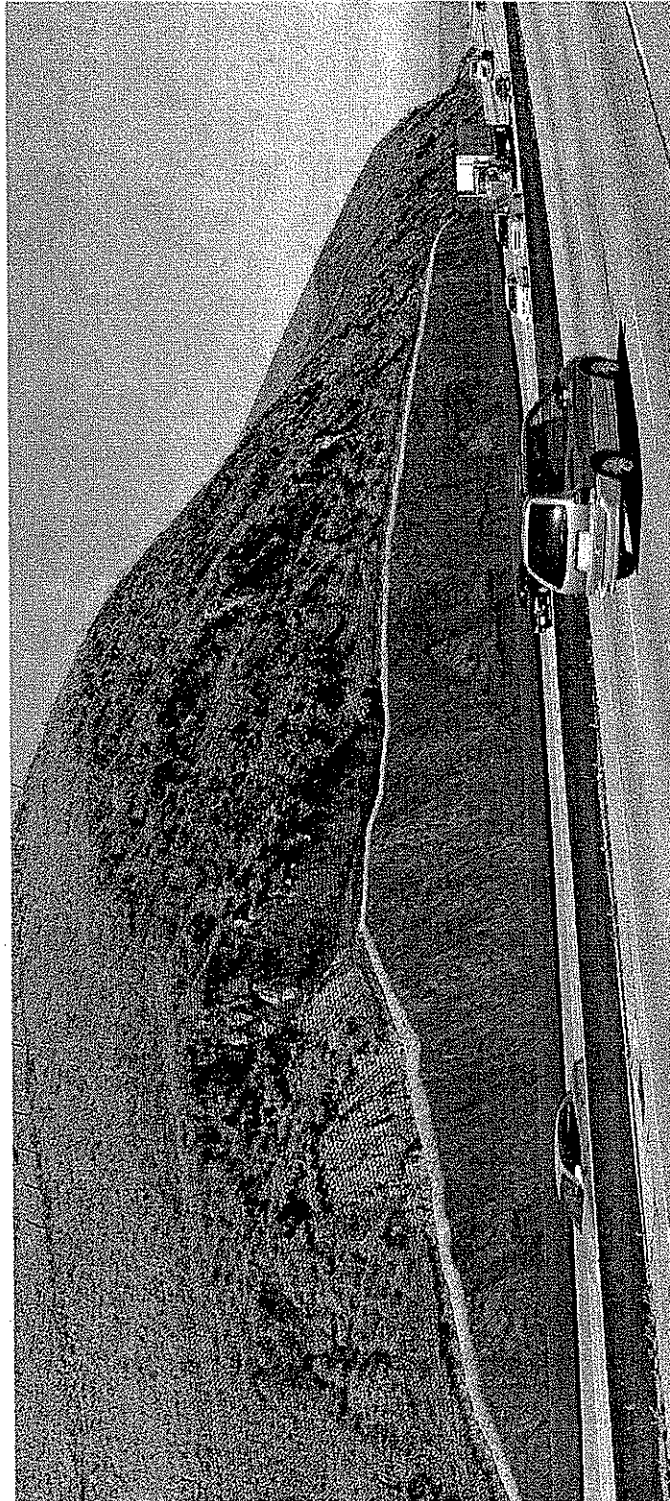
Existing condition looking south toward the distressed median slope area, from the westbound lanes. East and westbound lanes are separated by up to 500 feet by a deep ravine of engineered fill slopes.

Environmental Consequences

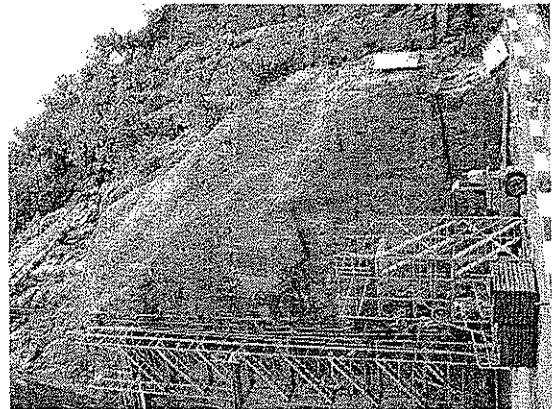
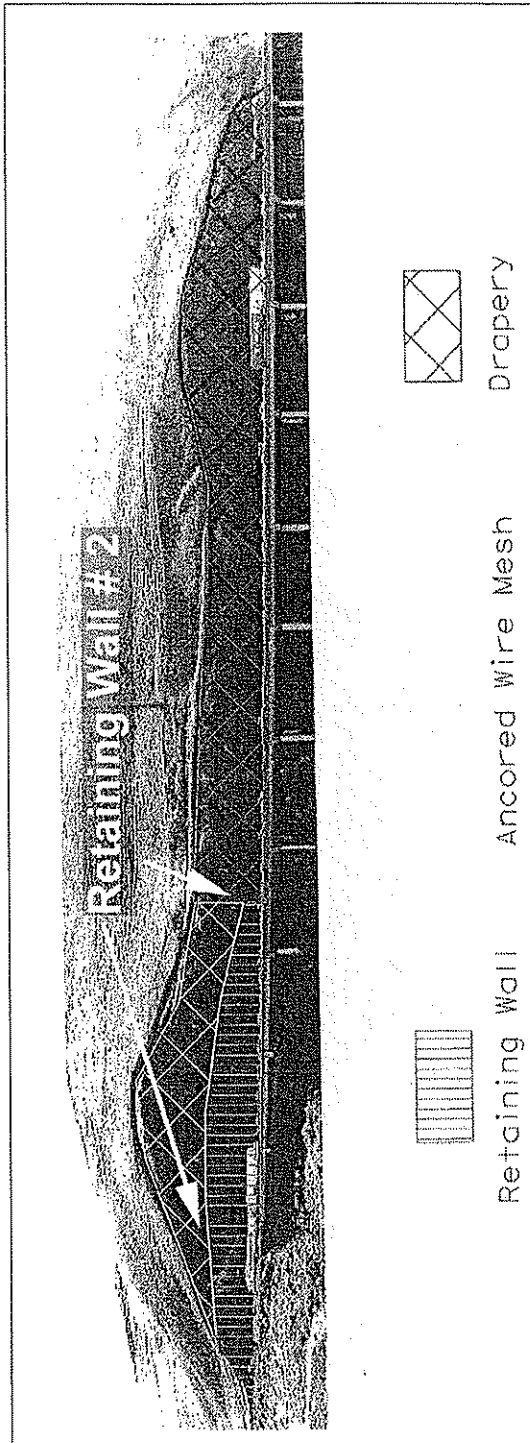
The existing visual setting of all viewpoints within the project limits are essentially similar in visual quality and character with minor individual differences that do not affect the overall baseline visual quality or viewer response ratings. Similarly, the walls, though different in terms of exact height and length, are essentially similar in their effects on visual character and quality.

Key Viewpoint 1

A simulation of Key Viewpoint 1 depicting conditions following the construction of wall #2 and shoulder widening is shown below.



A simulation of Key Viewpoint 1 depicting the area of coverage of proposed RSP with wire mesh, and examples of installed wire mesh in other similar situations is shown below.



As depicted in the simulations, anticipated visual effects at Key Viewpoint 1 would include moderate contrast with the existing landscape character and a moderate decline in intactness and unity, due to visually co-dominant intrusion of the new retaining wall. Vividness in these views would not decline because the proposed wall would replace existing rocky and grass-covered engineered cut slopes, which currently lack vividness. Intactness and unity would decline to a moderate degree with the replacement of the lower portion of the existing steep grass and rock slopes with a vertical wall of simulated rock or other concrete texture and color.

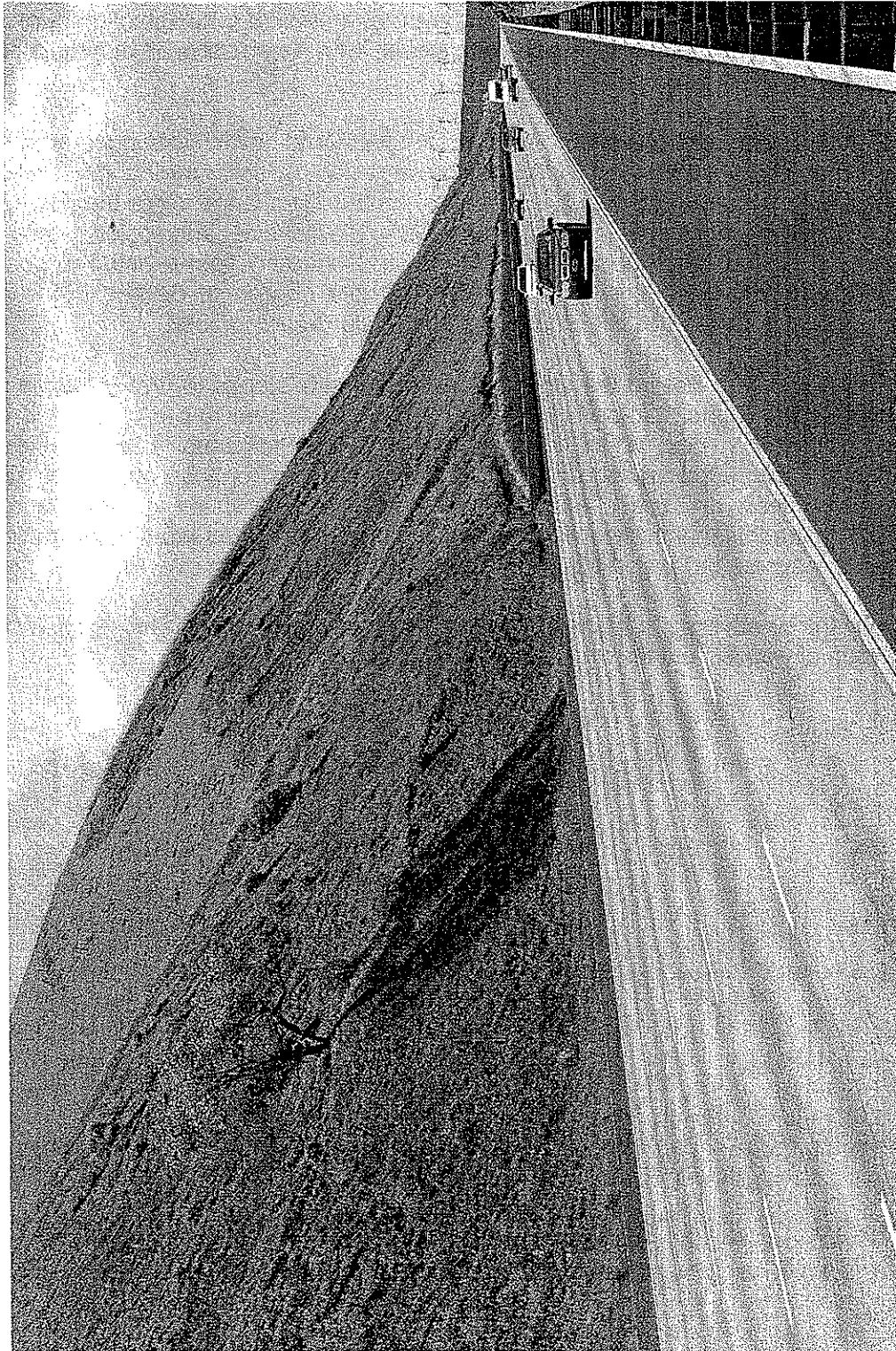
Wall #2 would have an average height of 29 feet, and would introduce a visually co-dominant feature of contrasting visual character with the surrounding grassland setting. However, the fundamental landform would not dramatically change since the new wall would resemble the existing sheer cut slopes. Only the texture and color would contrast appreciably. In the context of moderate viewer sensitivity, high visual exposure, and moderately high existing visual quality, this moderate degree of decline in visual quality would represent a somewhat adverse but less than significant impact.

Wire mesh RSP would be draped over exposed rocky side slopes to prevent loose rock from falling on passing traffic. Colored wire mesh may be selected to blend with the color and value of underlying rock strata, and is relatively inconspicuous due to a wide mesh dimension and low reflectivity coating. Since the mesh would only be applied on slopes that have already been drastically altered and exhibit marked visual contrast and lowered intactness, this additional increment of contrast and compromised intactness would result in a somewhat adverse but moderate, less than significant decline in overall visual quality.

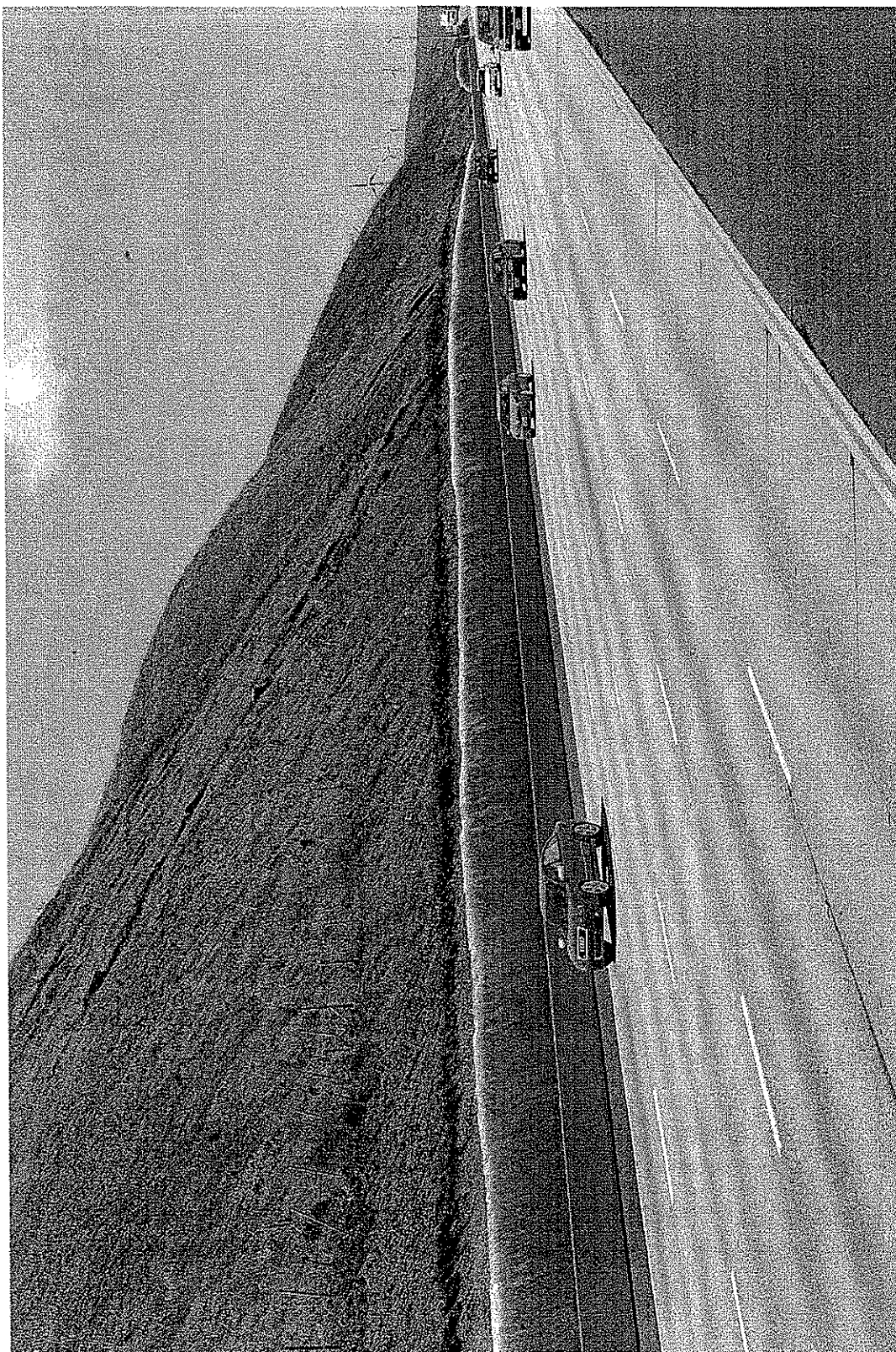
No significant or adverse impacts to views to the road are anticipated as a result of the construction of wall #2 and the wire mesh RSP.

Key Viewpoints 2, 3 & 4

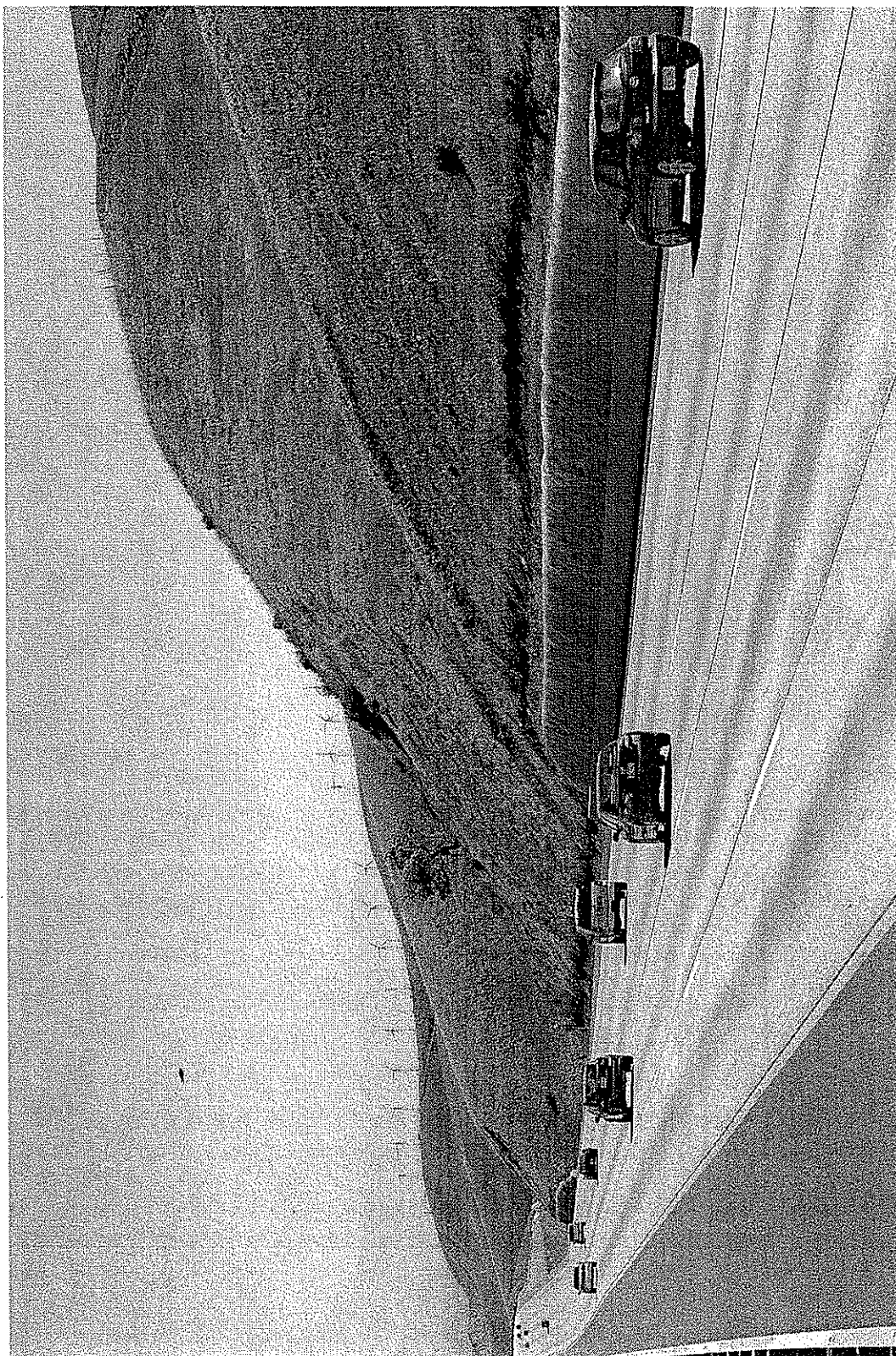
A simulation of Key Viewpoint 2 depicting conditions following the construction of wall #3 and shoulder widening is shown below.



A simulation of Key Viewpoint 3 depicting conditions following the construction of wall #3 and shoulder widening is shown below.



A simulation of Key Viewpoint 4 depicting conditions following the construction of wall #3 and shoulder widening is shown below.



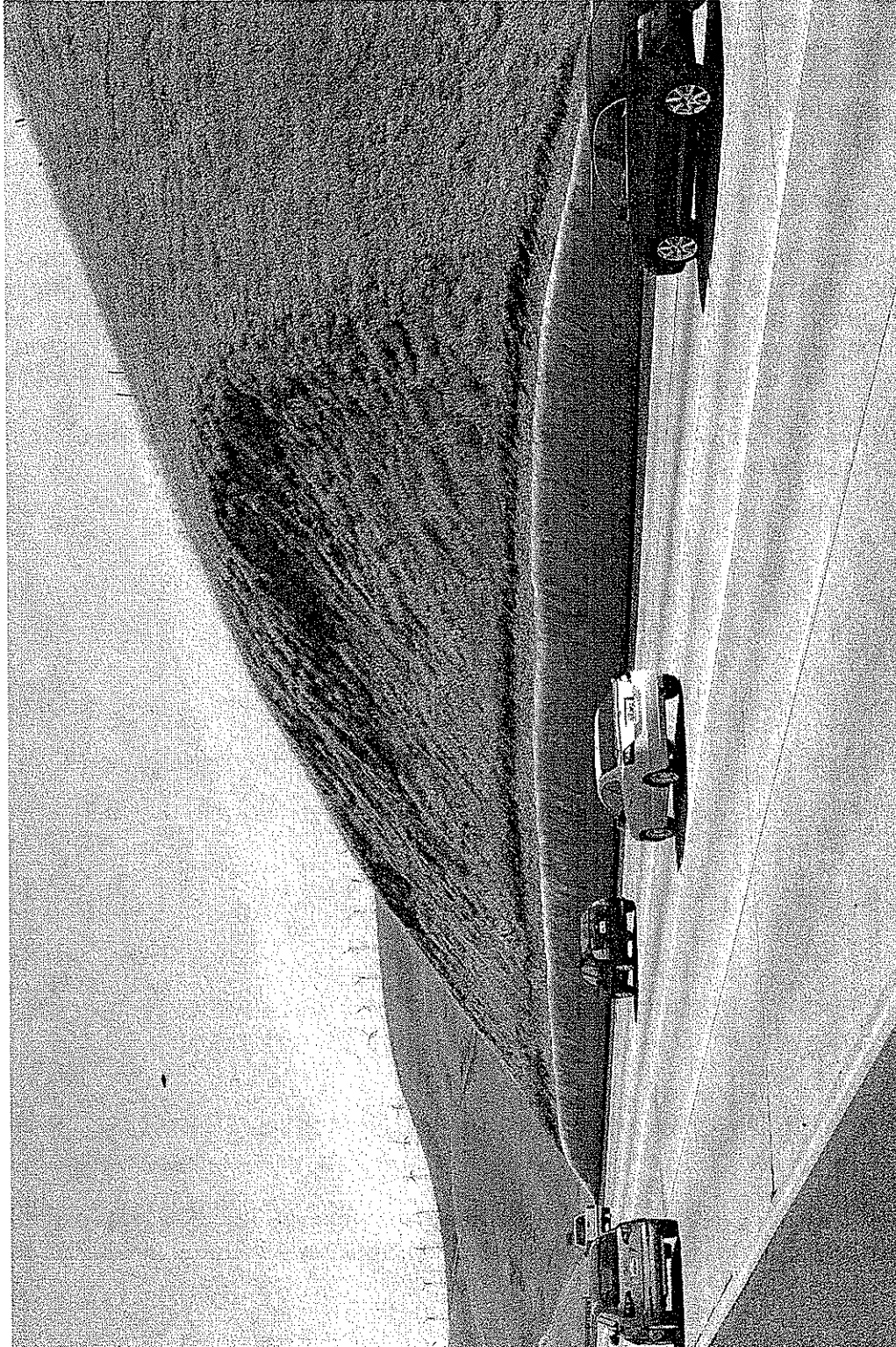
As noted previously, both the existing visual setting and the visual character and quality of the proposed retaining walls in each project location are qualitatively similar. The general impact analysis of wall #2 would thus apply generally to the other wall locations, including wall #3. Project impacts of wall #3 would include moderate contrast with the existing landscape character and a moderate decline in intactness and unity, due to the replacement of existing steep grass and rock slopes with a vertical retaining wall of simulated stone or other concrete texture and color selected to minimize contrast. Wall #3 would have an average height 8 feet, and would introduce a visually co-dominant feature of contrasting visual character with the surrounding grassland setting. The proposed wall would be 1,980 feet in length, thus strongly influencing the character of motorists' views for an extended distance. The duration of view for eastbound motorists at 65 mph would be roughly 21 seconds, a considerable duration, and traffic is often much slower during congested periods.

These effects would represent a moderate decline in visual quality of foreground views of this wall. Impacts to views of westbound motorists from across the freeway would be similar, but somewhat less due to distance. In the context of moderate viewer sensitivity, high visual exposure, and moderate existing visual quality, the moderate decline in visual quality from the wall would represent a somewhat adverse but less than significant impact.

No sensitive off-road viewers are in the immediate viewshed of wall #3. Thus, no impacts in views to the road are anticipated.

Key Viewpoint 5

A simulation of Key Viewpoint 5 depicting conditions following the construction of wall #4 and shoulder widening is shown below.



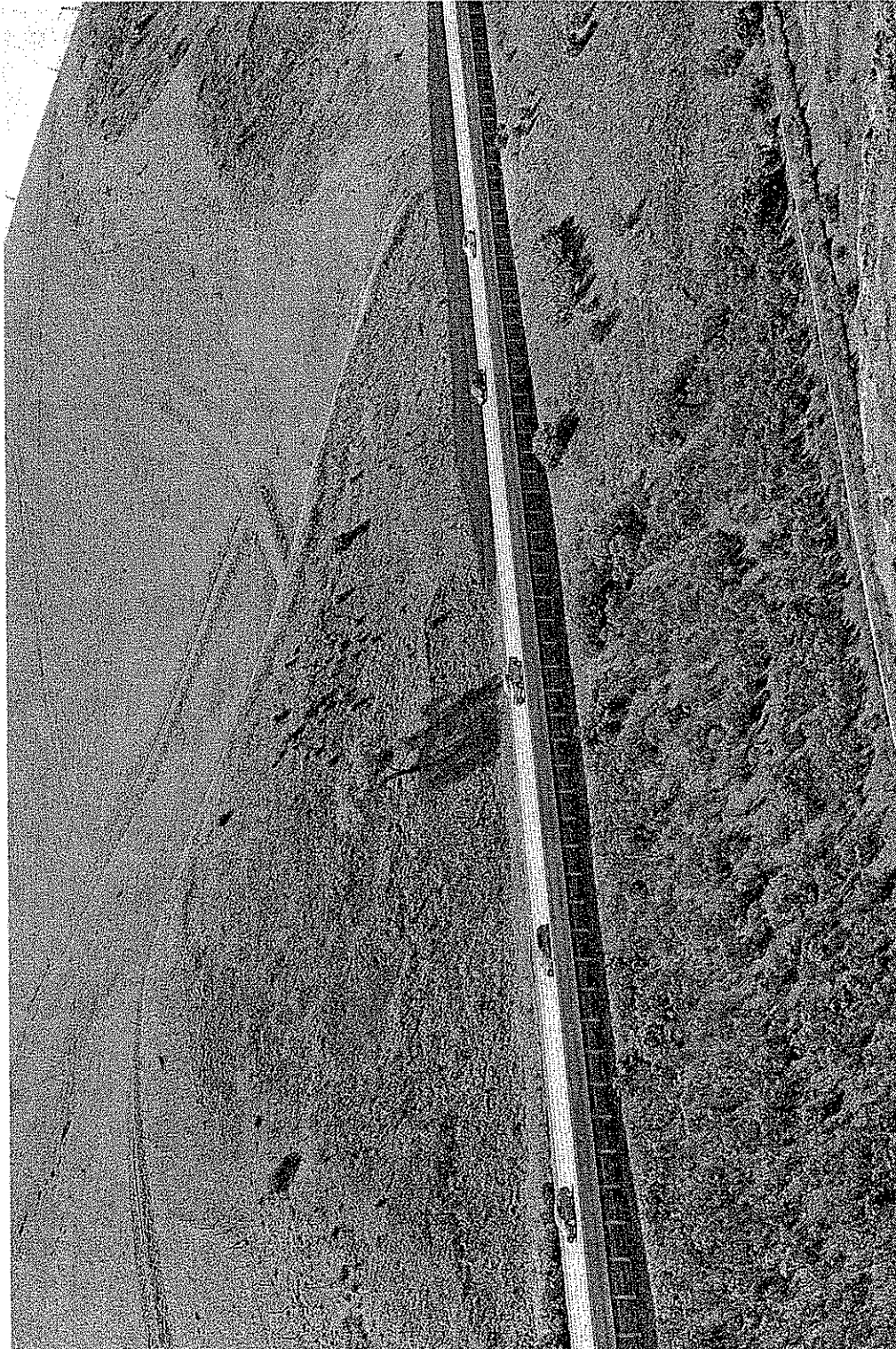
As noted previously, both the existing visual setting and the visual character and quality of the proposed retaining walls in each project location are qualitatively similar. Wall #4 would be experienced as a virtual continuation of wall #3, with only a short break of roughly 650 feet between them. The analysis of wall #3 would thus apply also to wall #4.

In the context of moderate viewer sensitivity, high visual exposure, and moderate existing visual quality, the moderate degree of decline in visual quality from the walls and wire mesh would represent a somewhat adverse but less than significant impact.

No sensitive off-road viewers are in the immediate viewshed of wall #4. Thus, no impacts in views to the road are anticipated.

Key Viewpoint 6

A simulation of Key Viewpoint 6 depicting conditions following project construction and re-growth of the erosion control revegetation is shown below.



Key Viewpoint 6 represents potential project impacts from construction of the proposed down slope retaining (tie-back) wall as part of the proposed scope for repair of the distressed median slope.

The visible portions of the median shoulder retaining wall would be visible only to motorists on nearby portions of westbound I-580, particularly from the far left lane (Lane 1). Approximately 7 feet of the wall's height would be visible above grade. The existing view is compromised and lacking in intactness due to the predominance of the artificial, geometric land forms of the existing engineered slopes. The wall would occupy the uppermost portion of the engineered downhill fill slope below the roadway. The wall would be proportionately subordinate in scale to the surrounding slopes and would thus have a minimal effect on vividness, intactness, and unity of motorists' views. At these viewing distances, the wall would be visually subordinate and relatively inconspicuous, and would thus, despite its considerable length, have a minimal effect on visual quality.

The existing downhill slope where the wall would be constructed is vegetated with low-growing native shrub cover that differs from the prevailing grassland land cover, and helps to improve the intactness and vividness of the slopes between the two portions of I-580 where it is present. Construction of the wall is likely to require removal of portions of this shrub cover, resulting in some adverse decline in visual intactness and vividness.

No sensitive off-road viewers are in the immediate viewshed of the distressed median shoulder. Overall, the median shoulder slip would thus have a negligible adverse visual impact, with some potential beneficial effects in the long term.

Scenic Highway Status

I-580 in the study area was listed in the original enabling legislation for the State Scenic Highway Program in 1963 as an eligible scenic highway, but has not been nominated or designated. It is uncertain whether existing wind development within Altamont Pass would affect the highway's eligibility, or whether nomination by the county would occur in the future, although there are no current plans by the county to do so.

To be designated under the State Scenic Highway Program, highways must meet various criteria established in a visual assessment conducted and reviewed during the scenic highway's nomination process. The visual assessment includes an evaluation of the corridor's visual quality in terms of vividness, intactness, and unity. In particular, visual intrusions cannot significantly impact the intactness and unity of the scenic corridor.

The Department's Scenic Highway Guidelines define a specific process and criteria to determine eligibility of a highway for scenic status. Among these, not more than one-quarter of the proposed scenic highway should be affected by visual intrusions. Visual intrusions may be natural or constructed elements, viewed from the highway, that adversely affect the scenic quality of a corridor. Examples of visual intrusions may include buildings, unsightly land uses, parking lots, advertising, noise barriers, power lines and communication facilities, agriculture, exotic (non-native) vegetation, clear-cutting, erosion, grading, and the roadway and associated structures themselves. Intrusions are classified as minor, moderate, or major, but in any case not more than one quarter of the length should be affected.

Avoidance, Minimization, and/or Mitigation Measures

The introduction of the proposed retaining walls would have minor short- and long-term adverse and potentially significant impacts on the visual character and quality of the I-580 corridor. However, with recommended minimization measures, the decline in visual quality would be limited and impacts would be reduced to less than significant.

Minimization measures for the retaining walls:

- Application of context sensitive wall texture and color treatment to reduce visual contrast and reflectivity, and enhance compatibility of visual character to the greatest extent feasible.
- For the median shoulder slippage wall, appropriate wall texture is likely to differ from that selected for uphill walls, therefore, wall texture will be selected to blend with the highway, and to minimize reflectivity, glare, and overall color contrast of the wall.
- Careful and optimal selection of wall color and value to minimize wall contrast in both summer and winter conditions.
- Restriction of grading and grubbing beyond wall to no more than 5 feet wherever feasible.
- Walls will not have gutters or chain-link safety fencing in order to reduce visual contrast.
- Minimization of overall wall height to the greatest extent feasible.
- Supervision by the Department during wall texturing.

Minimization measures for the RSP wire mesh revegetation:

- Application of hydroseeded revegetation, using seed mix to blend with the surrounding existing grassland setting.
- Wire mesh will be selected to match color and value of underlying substrate to the greatest feasible extent, i.e. light-colored mesh to cover light colored substrate, and dark mesh to cover dark substrate.

Minimization measure for shrub re-vegetation:

- Hydroseeded re-vegetation of all areas of disturbed soil surfaces from repair of the median shoulder slip, utilizing a seed mix that includes native shrub species to replace and enhance shrub cover lost to shoulder slip/wall construction.

Minimization measure for contour grading and slope rounding:

- Contour grading and slope rounding at slope transitions to minimize the artificial, engineered appearance of resulting slopes and to blend with the natural topography to the greatest feasible extent.

General minimization measures for construction:

- Unsightly material and equipment storage and staging will not be visible within the foreground of the highway corridor to the extent feasible. Where such siting is unavoidable, material and equipment shall be visually screened where feasible to minimize visibility from the roadway and nearby sensitive off-road receptors.
- Construction, staging, and storage areas will be screened where feasible by visually opaque screening wherever they will be exposed to public view for extended periods of time.
- Construction activities will be phased to minimize the duration of disturbance to the shortest feasible time.
- All areas disturbed by construction, staging, and storage will be re-vegetated per the re-vegetation minimization measure noted above.
- Construction activities will limit all construction lighting to within the area of work and avoid light trespass through directional lighting, shielding, and other measures as needed.

2.3 CULTURAL RESOURCES

Regulatory Setting

"Cultural resources" as used in this document refers to all historical and archaeological resources, regardless of significance. Laws and regulations dealing with cultural resources include:

The National Historic Preservation Act of 1966, as amended, (NHPA) sets forth national policy and procedures regarding historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for the National Register of Historic Places. Section 106 of NHPA requires federal agencies to take into account the effects of their undertakings on such properties and to allow the Advisory Council on Historic Preservation the opportunity to comment on those undertakings, following regulations issued by the Advisory Council on Historic Preservation (36 CFR 800). On January 1, 2004, a Section 106 Programmatic Agreement (PA) between the Advisory Council, FHWA, State Historic Preservation Officer (SHPO), and the Department went into effect for Department projects, both state and local, with FHWA involvement. The PA implements the Advisory Council's regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to the Department. The FHWA's responsibilities under the PA have been assigned to the Department as part of the Surface Transportation Project Delivery Pilot Program (23 CFR 773) (July 1, 2007).

Historic properties may also be covered under Section 4(f) of the U.S. Department of Transportation Act, which regulates the "use" of land from historic properties.

Historical resources are considered under the California Environmental Quality Act (CEQA), as well as California Public Resources Code (PRC) Section 5024.1, which established the California Register of Historical Resources. PRC Section 5024 requires state agencies to identify and protect state-owned resources that meet National Register of Historic Places listing criteria. It further specifically requires the Department to inventory state-owned

structures in its rights-of-way. Sections 5024(f) and 5024.5 require state agencies to provide notice to and consult with the State Historic Preservation Officer (SHPO) before altering, transferring, relocating, or demolishing state-owned historical resources that are listed on or are eligible for inclusion in the National Register or are registered or eligible for registration as California Historical Landmarks.

Affected Environment

An Archaeological Survey Report (ASR) and a Historic Property Survey Report (HPSR) were completed for the project in June 2009. The Department's Office of Cultural Resources has completed these reports to ensure that the project is carried out in a manner consistent with Department responsibilities under the January 2004 *Programmatic Agreement under the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it Pertains to the Administration of the Federal-Aid Highway Program in California* (PA) for compliance with Section 106 of the National Historic Preservation Act (NHPA).

The Area of Potential Effects (APE) for archaeology has been established in consultation with Department staff to include any location where construction activities will occur. The APE includes temporary access roads, construction staging areas, retaining wall locations, rock slope protection area and the distressed median slope repair east of the North Flynn Road interchange. No architectural APE was established because the project has no potential to directly or indirectly affect architectural resources.

The vertical APE for this project is from the ground surface to a maximum depth of 40 feet at the deepest pile for the distressed median slope repair. The retaining walls will require approximately 8 to 30 feet of excavation.

The project would not affect any USDOT Section 4(f) historic resource since no such uses were identified within the project limits.

If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find.

If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to Public Resources Code (PRC) Section 5097.98, if the remains are thought to be Native American, the coroner will notify the Native American Heritage Commission (NAHC) who will then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains will contact Jennifer Darcangelo, Department Chief, Office of Cultural Resource Studies, so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.

Environmental Consequences

The Department's determination is that this project will have no potential to affect historic properties. In accordance with the PA, the ASR and HPSR will not need to be submitted to the State Office of Historic Preservation for review as the undertaking has a Finding of No

Historic Properties Affected. The Section 106 process is complete for this project. However, if project plans should change, additional studies may be required.

Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization and/or mitigation measures are proposed.

Physical Environment

2.4 WATER QUALITY AND STORM WATER RUNOFF

Regulatory Setting

Section 401 of the Clean Water Act (CWA) requires water quality certification from the State Water Resources Control Board (SWRCB) or from a Regional Water Quality Control Board (RWQCB) when the project requires a CWA Section 404 permit. Section 404 of the CWA requires a permit from the U.S. Army Corps of Engineers (USACE) to discharge dredged or fill material into waters of the United States.

Along with CWA Section 401, CWA Section 402 establishes the National Pollutant Discharge Elimination System (NPDES) permit for the discharge of any pollutant into waters of the United States. The United States Environmental Protection Agency (USEPA) has delegated administration of the NPDES program to the SWRCB and nine RWQCBs. The SWRCB and RWQCB also regulate other waste discharges to land within California through the issuance of waste discharge requirements under authority of the Porter-Cologne Water Quality Act.

Storm water discharges from the Department's construction activities disturbing one acre or more of soil are permitted under the Department's Statewide Storm Water NPDES permit. These discharges must also comply with the substantive provisions of the SWRCB's Statewide General Construction Permit. Non-Departmental construction projects (encroachments) are permitted and regulated by the SWRCB's Statewide General Construction Permit. All construction projects exceeding one acre or more of disturbed soil require a Storm Water Pollution Prevention Plan (SWPPP) to be prepared and implemented during construction. The SWPPP, which identifies construction activities that may cause discharges of pollutants or waste into waters of the United States or waters of the State, as well as measures to control these pollutants, is prepared by the construction contractor and is subject to Department review and approval.

Finally, the SWRCB and the RWQCBs have jurisdiction to enforce the Porter-Cologne Act to protect groundwater quality. Groundwater is not regulated by Federal law, but is regulated under the state's Porter-Cologne Act. Some projects may involve placement or replacement of on-site treatment systems (OWTS) such as leach fields or septic systems or propose implementation of infiltration or detention treatment systems that may pose a threat to groundwater quality. Currently the OWTS program is without SWRCB regulation but you should be aware of threats to groundwater quality on the project site and evaluate and address accordingly in the environmental document. Design standards for installation and operation of infiltration and detention treatment systems should protect groundwater quality and those protections should also be addressed in the environmental document.

Hydro-modification management is required by the C.3 provisions to the Alameda County Municipal Stormwater NPDES permit, as adopted by the Region 2 (San Francisco Bay) of

the Regional Water Quality Control Board (RWQCB-2) on March 14, 2007. Since this project would require certification under Section 401 of the Clean Water Act, the Department is subjected to the same hydro-modification management requirements as the County. The project will also be subjected to any hydro-modification requirements set forth by the SWRCB.

Affected Environment

A Storm Water Data Report (SWDR) has been completed for the environmental document phase of the project and will continue to be developed and updated as the project proceeds into the design phase. The Draft Natural Environment Study (NES) was also consulted for this section.

There are two creeks present within the project vicinity. The first creek, Mountain House Creek, borders the south side of I-580 near the eastern portion of the project and flows to the east toward the San Joaquin Valley. The second creek, Arroyo Seco Creek, borders the north side of I-580 near the middle of the project and flows west towards the City of Livermore. Mountain House Creek confluences with the San Joaquin River whereas the Arroyo Seco Creek confluences with Alameda Creek, which flows ultimately into the San Francisco Bay.

The project is located within the jurisdictional limits of two RWQCB regions. The portion of this project west of the Altamont Pass (North Flynn Road) is under the jurisdiction of the RWQCB-San Francisco Bay (Region 2), and the portion east of the Altamont Pass (North Flynn Road) is under the jurisdiction of the RWQCB-Central Valley (Region 5). The SWRCB administers projects that are located within the jurisdiction of two RWQCB regions and therefore will administer this project.

Environmental Consequences

A possible, but temporary effect is the presence of pollutants in storm water discharges throughout construction.

This project involves soil disturbance greater than three acres. Therefore, the project will comply with the Department's Statewide General Construction Permit for storm water discharges from construction sites where, for example, clearing, grading, stockpiling, and/or excavation result in soil disturbances of at least one acre or more. To comply with the conditions of the Department NPDES Permit and address the temporary water quality impacts resulting from construction activities in this project, Standard Special Provision (SSP) 07-345 will be implemented during the design phase. This SSP will address the preparation of the SWPPP document and the implementation of SWPPP during construction.

Avoidance, Minimization, and/or Mitigation Measures

Best Management Practices (BMPs) and design elements of the project will be documented to demonstrate that project construction and operation will have minimal or no impact to existing water quality in Mountain House Creek and Arroyo Seco Creek.

The Department's District 4 Storm Water Coordination Branch will assess potential water quality impacts of the project alternatives through geometric design and investigate the potential incorporation of permanent treatment BMPs into the project to reduce the

discharge of pollutants during and after construction to the Maximum Extent Practicable. These BMPs fall into three categories: Temporary Construction Site BMPs (BMPs that are applied during construction activities to control sedimentation, erosion, and the discharge of other pollutants), Permanent Design Pollution BMPs (BMPs to improve water quality by reducing erosion, stabilizing disturbed soil areas, and maximizing vegetated surfaces), Permanent Treatment BMPs (BMPs to receive storm water run-off from traveled ways and to treat prior to discharging beyond the highway ROW), and Maintenance BMPs.

The proposed project is not exempt from incorporating permanent Treatment BMPs. The Department's approved permanent treatment BMPs include: biofiltration systems (biofiltration strips and swales), infiltration basins, detention basins, traction, sand traps, dry weather flow diversions, media filters, gross solids removal devices, multi-chamber treatment trains and wet basins.

Hydro-modification requirements for this project may be met with the implementation of volume-based flow control structures, such as underground pipes and above ground basins with specially designed outlet structures. The project may also consider meeting hydro-modification requirements through the use of treatment controls that reduce flow rates by infiltration or evapotranspiration, such as bioswales.

2.5 GEOLOGY/SOILS/SEISMIC/TOPOGRAPHY

For geologic and topographic features, the key federal law is the Historic Sites Act of 1935, which establishes a national registry of natural landmarks and protects "outstanding examples of major geological features." Topographic and geologic features are also protected under the California Environmental Quality Act.

This section also discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. The Department's Office of Earthquake Engineering is responsible for assessing the seismic hazard for Department projects. The current policy is to use the anticipated Maximum Credible Earthquake (MCE), from young faults in and near California. The MCE is defined as the largest earthquake that can be expected to occur on a fault over a particular period of time.

Affected Environment

A Preliminary Geotechnical Report was completed for this project in July 2009.

In general, the portion of the project located in the Livermore Valley is underlain with alluvial deposits and the portion of the project vicinity through the Altamont Pass is underlain with bedrock and fill. The alluvial deposits consist of alluvial fans and fluvial deposits (Qpaf), which are described as brown, dense gravel-like and clay-like sand or clay-like gravel that fines upward to sandy clay. All Qpaf deposits can be related to modern stream courses. They are distinguished from younger alluvial fans and fluvial deposits by higher topographic position, greater degree of dissection, and stronger soil profile development. The Qpaf deposits are overlain by Holocene deposits on lower parts of the alluvial plain, and incised by channels that are partly filled with Holocene alluvium on higher parts of the alluvial plain.

The bedrock underlying the Altamont Pass portion of the project comprises the following geologic units: Neroly Sandstone, late Miocene; Cierbo Sandston, late Miocene; Unnamed Sandstone, Late Cretaceous; and Unnamed shale and siltstone, Late Cretaceous.

The project is underlain by two main soil types: the Rincon-San Ysidro Association and the Altamont-Diablo Association. The Rincon-San Ysidro Association underlies only the very western portion of the project, and is characterized to have a slight to moderate erosion hazard. The Altamont-Diablo Association underlies the majority of the project area, and is characterized to have a moderate erosion hazard on natural slopes and a severe erosion hazard where there are steep cuts into the soil. These soils are highly sensitive to disturbance and are highly erodible under several land use situations, including cultivation and grazing. Most cultivated soils have eroded because of slope and the agricultural methods used.

The project area is located within Livermore Valley groundwater basin, adjacent to the Diablo Range. The highlands of the Diablo Range are generally non-water bearing. The alluvium deposits range from the surface to 60 feet below the ground surface. The upper aquifer in the alluvium is "unconfined", meaning the water table fluctuates in response to recharge and discharge. According to the Historically High Groundwater Map of the Livermore Quadrangle, groundwater below the project limits in the eastern portion of Livermore Valley ranges from 20 to 40 feet below ground surface. The groundwater levels adjacent to Mountain House Creek can be assumed to be at creek level.

Seismic Activity

Geologists and seismologists recognize the San Francisco Bay Area as one of the most active seismic regions in the United States. There are three major faults that trend in a northwest direction through the Bay Area, which have generated about 12 earthquakes per century large enough to cause significant structural damage. These earthquakes occur on faults that are part of the San Andreas Fault system that extends for at least 700 miles along the California Coast, and includes the San Andreas, Hayward, and Calaveras Faults. The San Andreas Fault is located approximately 22 miles southwest of the project vicinity. The Hayward and Calaveras Faults are located approximately 18 and 12 miles southwest of the project vicinity, respectively. In addition, the active Greenville Fault intersects with the project area and the active Las Positas Fault zone is located approximately 2 miles south of the project vicinity.

Seismologic and geologic experts convened by the U. S. Geological Survey concluded that there is a 62 percent probability for at least one "large" earthquake of magnitude 6.7 or greater in the Bay Area before 2032. They also maintain that there could be more than one earthquake of this magnitude and that numerous "moderate" earthquakes of about magnitude 6 are probable before 2032. The San Andreas Fault is estimated to have a 21 percent probability of producing a magnitude 6.7 or larger earthquake by the Year 2032 (WGCEP, 2003). The probability of the Hayward, Calaveras, and Greenville Faults producing a similar size earthquake during the same time period is 27 percent, 11 percent and 3 percent, respectively.

The Greenville Fault is the controlling seismic fault within the project vicinity and is classified as historically active. The most recent significant seismic activity along the Greenville Fault occurred in 1980 when two earthquakes of Richter Magnitudes 5.8 and 5.2 occurred. The earthquakes caused discontinuous surface ruptures within the Greenville Fault zone extending up to approximately four miles in combined length from I-580 and Greenville Road to the northwest along the eastern margin of the Livermore Valley. Although, no surface rupture was observed across I-580, pavement on the Greenville Road Overcrossing (Br. No.

33-0026 L) settled approximately 12 inches and cracking occurred on an abutment as a result of ground shaking associated with the earthquakes.

The majority of the project is located in an area where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements. Landslides are relatively common in the vicinity of the project area and are pervasive throughout many of the uplands within the Altamont Pass region. Slope failure in the project vicinity ranges from small, dispersed landslides to vast areas of nearly continuous, large, old landslides susceptible to reactivation. Rainfall is a factor in slope failure, and short, intense periods of rainfall have a greater impact of slope failure than annual mean rainfall figures.

Environmental Consequences

Seismic activity may affect the project vicinity along any of the active faults discussed above. Earthquake induced hazards can be categorized as primary and secondary seismic effects.

The Greenville Fault intersects the project area at its western end and is classified as an active fault. Primary seismic effects such as ground rupture or surface deformation resulting from differential movement along a fault trace are expected to occur along the Greenville Fault.

The segment of the project between PM 7.8 and PM 8.0 is located in an area where historical occurrence of earthquake induced liquefaction, or local geological, geotechnical and groundwater conditions indicate potential for permanent earthquake-induced ground displacements, according to the State of California Preliminary Seismic Hazard Zones Map for the Altamont Quadrangle (2008).

Lurch cracks may develop in the silty and clay-like soil overlying the site. The potential for lurch cracking will be higher during the rainy season when the soil is saturated. The hazard from cracking is considered minimal.

During moderate and large earthquakes, soft or loose, natural or fill soils can become densified and consolidate, often unevenly across a site. The segment of I-580 within the project limits was originally constructed approximately 50 years ago using cut and fill techniques with fills up to 80 feet in thickness. Given the relatively old age of the fill, a significant amount of consolidation of the fill has likely already occurred following the 1980 Greenville Fault earthquakes. There is a moderate to high potential for differential compaction to occur to segments of I-580 underlain by fill, especially where fill is over 20 feet in thickness. The potential for differential compaction to occur in areas underlain by cuts into bedrock is nil.

Steep rocky cut slopes border the southern edge of the roadway at many locations within the project limits. The sedimentary beds in the project area strike northwest (perpendicular to the roadway) and dip shallowly to the southwest. This is relatively stable configuration for strata. The sedimentary beds consist of alternating layers of relatively hard sandstone and weak shale. Through the action of slaking (weathering), the shale beds erode at a faster rate in comparison to the harder sandstone beds. Eventually, this weathering process causes a condition where the fractured sandstone beds are undermined and become unstable, causing sandstone boulders of varying sizes to roll down the slope. Rocks falling from the steep high cut slopes currently accumulate in a catchment area that was constructed along the southern shoulder at the base of the existing roadway.

Avoidance, Minimization, and/or Mitigation Measures

During a significant seismic event, the project area would be exposed to hazards such as fault rupture, strong ground shaking, subsidence (a gradual shrinking to a lower level), and liquefaction. Therefore, ground shaking should be expected at some times during the design life of the project.

As noted in the Project Description section of this document, the catchment area for rocks falling from the steep high cut slopes will be removed during the project construction, and there will not be sufficient room to create a new catchment area. Therefore, the rock slope protection (RSP) measures of anchored wire mesh and drapery will be implemented.

Erosion control BMPs are addressed in the Water Quality and Storm Water Runoff section of this document. No other avoidance, minimization or mitigation measures are proposed.

2.6 HAZARDOUS WASTE/MATERIALS

Regulatory Setting

Hazardous materials and hazardous wastes are regulated by many state and federal laws. These include not only specific statutes governing hazardous waste, but also a variety of laws regulating air and water quality, human health and land use.

The primary federal laws regulating hazardous wastes/materials are the Resource Conservation and Recovery Act of 1976 (RCRA) and the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA). The purpose of CERCLA, often referred to as Superfund, is to clean up contaminated sites so that public health and welfare are not compromised. RCRA provides for "cradle to grave" regulation of hazardous wastes. Other federal laws include:

- Community Environmental Response Facilitation Act (CERFA) of 1992
- Clean Water Act
- Clean Air Act
- Safe Drinking Water Act
- Occupational Safety and Health Act (OSHA)
- Atomic Energy Act
- Toxic Substances Control Act (TSCA)
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

In addition to the acts listed above, Executive Order 12088, Federal Compliance with Pollution Control, mandates that necessary actions be taken to prevent and control environmental pollution when federal activities or federal facilities are involved.

Hazardous waste in California is regulated primarily under the authority of the federal Resource Conservation and Recovery Act of 1976, and the California Health and Safety Code. Other California laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup and emergency planning.

Worker health and safety and public safety are key issues when dealing with hazardous materials that may affect human health and the environment. Proper disposal of hazardous material is vital if it is disturbed during project construction.

Affected Environment

A site investigation will be necessary to assess soil disposal and reuse options. An Initial Site Assessment¹ (ISA) is not necessary for this project because of the project location, and the existing and historic land use at and surrounding the project; preliminary data search did not find any leaking underground storage tank (LUST) sites; and there is no right of way (ROW) acquisition.

The geological survey map did not show the presence of naturally occurring asbestos in the soil within the project footprint. Therefore, an asbestos survey report is not necessary. No bridge alterations will be done for this project. Therefore, an asbestos and lead based paint survey report will not be required for this project.

Environmental Consequences

This project will involve excavation of existing unpaved shoulders along eastbound I-580. Lead contamination of the soil in the unpaved area adjacent to shoulders is very likely because of the history of high traffic volumes along I-580, including during the era of leaded fuel additives.

Soil excavation, transportation and disposal to a Class 1 landfill facility is estimated to have a unit cost of approximately \$250 per cubic yard, which could significantly impact the project cost. Investigations including soil sampling and testing may be conducted during the design stage of the project.

The Department of Toxic Substances Control (DTSC) issued a lead-contaminated soil variance on July 1, 2009 to the Department. The variance allows the Department to manage and dispose on-site aerially contaminated lead soils during roadway construction. The mandated engineering controls delineated in the variance for soil management practices should be considered during the design phase of the project.

Other environmental consequences may arise pending the completion and laboratory results of the site investigation. Further hazardous waste investigations including soil sampling and testing may be conducted during the design stage of the project.

Avoidance, Minimization, and/or Mitigation Measures

The site investigation report will provide recommendations for the safe management of hazardous substances within this project's footprint.

Per the Department's standard requirement, the contractor will prepare a project specific lead compliance plan (LCP) to prevent or minimize worker exposure to lead contaminated soil. The plan will include protocols for environmental and personnel monitoring

requirements for personal protective equipment and other appropriate health and safety procedures for the handling of lead-impacted soil.

2.7 AIR QUALITY

Regulatory Setting

The Clean Air Act as amended in 1990 is the federal law that governs air quality. Its counterpart in California is the California Clean Air Act of 1988. These laws set standards for the quantity of pollutants that can be in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). Standards have been established for six criteria pollutants that have been linked to potential health concerns; the criteria pollutants are: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM), lead (Pb), and sulfur dioxide (SO₂).

Under the 1990 Clean Air Act Amendments, the U.S. Department of Transportation cannot fund, authorize, or approve Federal actions to support programs or projects that are not first found to conform to State Implementation Plan for achieving the goals of the Clean Air Act requirements. Conformity with the Clean Air Act takes place on two levels—first, at the regional level and second, at the project level. The proposed project must conform at both levels to be approved.

Regional level conformity in California is concerned with how well the region is meeting the standards set for carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), and particulate matter (PM). California is in attainment for the other criteria pollutants. At the regional level, Regional Transportation Plans (RTP) are developed that include all of the transportation projects planned for a region over a period of years, usually at least 20. Based on the projects included in the RTP, an air quality model is run to determine whether or not the implementation of those projects would conform to emission budgets or other tests showing that attainment requirements of the Clean Air Act are met. If the conformity analysis is successful, the regional planning organization, such as the Metropolitan Planning Commission for the greater San Francisco Bay Area and the appropriate federal agencies, such as the Federal Highway Administration, make the determination that the RTP is in conformity with the State Implementation Plan for achieving the goals of the Clean Air Act. Otherwise, the projects in the RTP must be modified until conformity is attained. If the design and scope of the proposed transportation project are the same as described in the RTP, then the proposed project is deemed to meet regional conformity requirements for purposes of project-level analysis.

Conformity at the project-level also requires “hot spot” analysis if an area is “nonattainment” or “maintenance” for carbon monoxide (CO) and/or particulate matter. A region is a “nonattainment” area if one or more monitoring stations in the region fail to attain the relevant standard. Areas that were previously designated as nonattainment areas but have recently met the standard are called “maintenance” areas. “Hot spot” analysis is essentially the same, for technical purposes, as CO or particulate matter analysis performed for NEPA purposes. Conformity does include some specific standards for projects that require a hot spot analysis. In general, projects must not cause the CO standard to be violated, and in “nonattainment” areas the project must not cause any increase in the number and severity of violations. If a known CO or particulate matter violation is located in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s) as well.

Affected Environment

The Air Quality Study Report was completed in July 2009. The Bay Area Air Quality Management District (BAAQMD) administers air quality regulations for the San Francisco Bay Area Air Basin, which consists of the nine counties that surround San Francisco Bay including Alameda County.

Sensitive receptors are locations where people susceptible to the effects of air pollutants may stay for an extended period of time, which include land uses and facilities such as residences, schools, playgrounds, childcare centers and hospitals. The project is on a rolling, mountainous terrain and surrounded mainly by open spaces and agricultural land uses with a few isolated buildings. The only sensitive receptor identified in the project area is the residential dwelling at 9992 Carroll Road, which is approximately 400 feet north of freeway.

The project is located within the San Francisco Bay Area Air Basin. It is near the Altamont Pass on the edge of the Livermore valley, which is a sheltered valley at the eastern border of the Air Basin. The air pollution potential is high for the Livermore Valley, especially for photochemical pollutants. The valley not only traps locally generated pollutants but also can be the receptor of ozone and its precursors from San Francisco, Alameda, Contra Costa and Santa Clara counties. This can happen near the end of an ozone episode in hot weather when the sea breeze regains its strength and carries these pollutants inland. Sometimes conditions in the fall may transport ozone from the San Joaquin Valley to the Livermore Valley.

Winter conditions in the Livermore Valley contribute to the development of a strong, surface based, temperature inversion. Local pollutants from automobiles, fireplaces and agricultural burning can concentrate within this stable layer of air, raising carbon monoxide and/or particulate matters levels.

Environmental Consequences

The current Regional Transportation Plan (RTP) for the Bay Area, known as Transportation 2035 Plan, was adopted by the Metropolitan Transportation Commission (MTC) on April 22, 2009 and was approved by the USDOT on May 29, 2009. The 2009 TIP is the most current conforming TIP, which was adopted by MTC on May 28, 2008 and approved by the Federal Transit Administration (FTA), and the FHWA on November 17, 2008.

The proposed project was included in the regional emissions analysis conducted by the MTC for the Transportation 2035 Plan (Project Reference No. 22013) and the 2009 TIP Amendment #09-06 (I.D. ALA090028). This analysis found that the plan and, therefore, the individual projects contained in the plan, are conforming projects, and will have air quality impacts consistent with those identified in the State Implementation Plan (SIP) for achieving the National Ambient Air Quality Standards (NAAQS). The MTC used the latest planning assumptions for the purpose of preparing the conformity analysis. Regional on-road motor vehicle emissions for future years were estimated using the MTC's travel demand forecast models (BAYCAST 2000), which estimates vehicle activity in the Bay Area, in conjunction with the ARB's latest model for determining motor vehicle emissions (EMFAC2007).

The USDOT issued its approval of the conformity determination for the Transportation 2035 Plan on May 29, 2009. The conformity finding means that the total motor vehicle emissions projected for the Transportation 2035 Plan and 2009 TIP are within the emissions budgets

established in the SIP, and that transportation control measures are implemented in a timely fashion. This conformity finding puts the nine-county region in conformity with SIP and all transportation-related federal air quality requirements. The project's design concept and scope have not changed significantly from what was analyzed in the regional emissions analysis.

Transportation Control Measures (TCMs) are regional measures used to reduce emissions. The proposed project is not a TCM project and would not interfere with the timely implementation of any TCMs identified in the SIP and Transportation 2035 Plan.

Table 7 below lists the attainment status of the San Francisco Bay Area Air Basin for various pollutants under the state and national standards.

Table 7: I-580 Ambient Air Quality Standards & Bay Area Attainment Status

Pollutant	Averaging Time	State Standard	State Attainment	Federal Standard	Federal Attainment
Ozone	8 Hour	0.070 ppm (137 µg/m ³)	N	0.08 ppm	N
	1 Hour	0.09 ppm (180 µg/m ³)	N	-	-
Carbon Monoxide	8 Hour	9.0 ppm (10 mg/m ³)	A	9 ppm (10 mg/m ³)	A
	1 Hour	20 ppm (23 mg/m ³)	A	35 ppm (40 mg/m ³)	A
Nitrogen Dioxide	Annual Arithmetic Mean	0.030 ppm (56 µg/m ³)		0.053 ppm (100 µg/m ³)	A
	1 Hour	0.18 ppm (338 µg/m ³)	A	-	
Sulfur Dioxide	Annual Arithmetic Mean	-		0.03 ppm (80 µg/m ³)	A
	24 Hour	0.04 ppm (105 µg/m ³)	A	0.14 ppm (365 µg/m ³)	A
	1 Hour	0.25 ppm (655 µg/m ³)	A	-	
Particulate Matter (PM ₁₀)	Annual Arithmetic Mean	20 µg/m ³	N	-	
	24 Hour	50 µg/m ³	N	150 µg/m ³	U
Particulate Matter (PM _{2.5})	Annual Arithmetic Mean	12 µg/m ³	N	15 µg/m ³	A
	24 Hour	-		35 µg/m ³	N
Sulfates	24 Hour	25 µg/m ³	A		
Lead	Calendar Quarter	-		1.5 µg/m ³	A
	30 Day Average	1.5 µg/m ³	A	-	
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m ³)	U	-	
Vinyl Chloride (chloroethene)	24 Hour	0.010 ppm (26 µg/m ³)	No information available	-	
Visibility Reducing particles	8 Hour (1000 to 1800 Pacific Standard Time)		U	-	
A=Attainment N=Nonattainment U=Unclassified					
Mg/m ³ =milligrams per cubic meter ppm=parts per million µg/m ³ =micrograms per cubic meter					

Source: BAAQMD

Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless, poisonous gas. CO is emitted directly from traveling vehicles. A product of incomplete burning of hydrocarbon-based fuels, CO consists of a carbon atom and an oxygen atom linked together. It enters the bloodstream through the lungs and forms carboxyhemoglobin, a compound that inhibits the blood's capacity to carry oxygen to organs and tissues. Persons with heart disease are especially sensitive to carbon monoxide poisoning and may experience chest pain if they breathe the gas while exercising. Infants, elderly persons, and individuals with respiratory diseases are also

particularly sensitive. CO can affect healthy individuals, impairing exercise capacity, visual perception, manual dexterity, learning functions, and the ability to perform complex tasks.

The CO analysis for this project adheres to the "Transportation Project-Level Carbon Monoxide Protocol", dated December 1997, prepared by the Institute of Transportation Studies, University of California at Davis and approved by the United States Environmental Protection Agency (USEPA) for use in the Bay Area. The protocol is based on the fact that the Bay Area meets air quality standards for carbon monoxide and permits a qualitative approach to determine its air quality impacts. Use of this protocol was recommended by the Bay Area Interagency Conformity Task Force, which is the interagency consultation group established pursuant to USEPA's conformity regulation and the Bay Area's conformity SIP. This protocol was approved by MTC in Resolution No. 3075 on June 24, 1998. It was accepted by the USEPA as an alternative to the quantitative analysis procedure specified in the 1997 Conformity Rule.

Since the Bay Area was designated a maintenance area for CO on June 1, 1998, the protocol indicates that an analysis by comparison is appropriate for this project. This involves a comparison of the proposed project with an existing facility within the air district that has the potential of creating higher CO concentrations at the time of attainment demonstration. A list of the project features to be compared is contained in Section 4.7.2 of the CO Protocol. As shown in Table 8, conditions on Route 101 from Tully Road to Story Road in San Jose are used for comparison purposes.

Table 8 - Comparison of Mainline Conditions

	Parameters	I-580 – Build Alternatives	Route 101 – Existing Tully to Story Roads
A	Receptor Distance	400 feet	20 feet
B	Roadway Geometry	8 lanes + 1 climbing lane	8 lanes + 2 auxiliary lanes
C	Worse case Meteorology	Coastal Valley	Coastal Valley
D	AADT Volumes	145,000 (2009) 177,000 (2015) 245,000 (2035)	247,000 (2007)
E	Hot/Cold Starts	10/50 EB 10/50 WB	10/50 NB 10/50 SB
F	Percent Heavy Duty Gasoline (HDG) Trucks	2.2%	2.4%
G	8 Hr. Background CO	1.7 ppm (2006-08)	2.7 ppm (2006-08)

Particulate Matters (PM₁₀ and PM_{2.5})

Particulate Matters (PM₁₀ and PM_{2.5}) refer to airborne particles that are less than 10 microns in diameter (PM₁₀) or less than 2.5 microns in diameter (PM_{2.5}). Transportation related particulate matters are both a regional and a project-level issue. The coarser particulate matters, PM₁₀, are typically formed by earth-based material that enter the air through a variety of actions including "entrainment" into the atmosphere by wind blown dust. Particles from brake and tire wear, from pavement wear, and from other vehicle degenerative processes also contribute to this PM size. However, the greatest contribution from this size category has "natural" rather than "man-made" origins. PM_{2.5} are thought to be more a

product of combustion sources. This material is believed to penetrate deeper into the lungs and remain lodged there rather than exhaled, causing negative impacts on health.

The San Francisco Bay Area is an unclassified area for the national PM₁₀ standard and an attainment area for national annual PM_{2.5} standards. On December 22, 2008, the USEPA has reclassified the Bay Area from attainment status to nonattainment after the national 24-hour PM_{2.5} standard was lowered from 65 µg/m³ to 35 µg/m³ in 2006. The new USEPA designation will become effective 90 days after publication of the regulation in the Federal Register, which has not occurred at the time of this writing. The Bay Area is non-attainment for the State PM₁₀ and PM_{2.5} standards.

The final conformity rule issued by the USEPA on March 10, 2006 establishes the transportation conformity criteria and procedures for determining which transportation projects must be analyzed for local air quality impacts in PM_{2.5} and PM₁₀. Qualitative project-level hot spot analysis is required for project-level conformity determinations in all PM_{2.5} and PM₁₀ nonattainment areas. Until the nonattainment designation becomes effective for the Bay Area Air Basin, qualitative hot spot analysis is not required for project-level conformity of this project.

On March 29, 2006, the USEPA and FHWA issued joint guidance on how to perform qualitative hot-spot analyses in PM_{2.5} and PM₁₀ nonattainment and maintenance areas titled "Transportation Conformity Guidance for Qualitative Hot-spot Analysis in PM_{2.5} and PM₁₀ Nonattainment and Maintenance Areas" (March 2006 Guidance). The following discussion is prepared in accordance the 2006 Guidance to demonstrate that this project would meet the project-level conformity requirement in the event that the nonattainment designation for PM_{2.5} becomes effective for the Bay Area.

The annual average daily traffic (AADT) of I-580 is currently in excess of 125,000 in the project area and over 8% or more of such AADT is diesel truck traffic. However, it has been concluded by the project's Highway Operational Report (March 2009) that the diesel truck traffic would not increase as a result of the project. The proposed project is, therefore, not considered a "Project Of Air Quality Concern" (POAQC) under 40 CFR 93.123(b)(1). Project-level PM hot spot analysis is not needed in meeting the requirements of Clean Air Act and 40 CFR 93.116.

Ozone

Ozone is an indirect pollutant. Ozone precursors are converted into ozone by photochemical reactions some distance downwind, over several hours. It is therefore impossible for most transportation projects to create a localized ozone "hot spot." The traffic on a highway contributes to the regional ozone precursor emissions, and analysis of such emissions and their impact is normally done for regional planning. If a project can be shown, through a regional conformity analysis as part of a Regional Transportation Plan and to be part of a plan that contributes to annual emission reductions, then its individual impact on ozone should not be an issue.

Construction Impacts

The proposed project would generate air pollutants during the construction period, which is expected to last a total of two years. Trucks and construction equipment emit hydrocarbons, oxides of nitrogen, carbon monoxide and particulates. Most pollution will consist of wind-blown dust generated by excavation, grading, hauling and various other activities. The

effects from the above activities would vary from day to day as construction progresses. No hot-spot analysis was conducted for the construction emissions of the project.

Recent studies have raised significant concerns about the health risks associated with emissions from diesel construction equipment. For PM₁₀, PM_{2.5} or air toxics, there currently are no microscale requirements that are applicable at the project level for the temporary impacts in the construction phase.

Mobile Source Air Toxics (MSATs)

The FHWA has developed a tiered approach for analyzing MSATs in preparing NEPA documents for highway projects. Depending on the specific project circumstances, FHWA has identified three levels of analysis:

- No analysis for projects with no potential for meaningful MSAT effects;
- Qualitative analysis for projects with low potential MSAT effects; or
- Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

Considering the AADT in the project area, a quantitative analysis was performed for this project. This analysis is an attempt to measure the level of emissions for the six priority MSATs for each alternatives, to use as a basis of comparison. However, available technical tools do not enable to predict the project-specific health impacts of the emission changes associated with the alternatives in this project. More information on MSATs is available in the Air Quality Study Report.

Avoidance, Minimization and/or Mitigation Measures

To minimize air quality impacts from construction activities, control measures as specified in the Environmental Stewardship section of Department Standard Specifications - Section 14-9.01 Air Pollution Control and Section 14-9.02 Dust Control will be implemented.

The California Air Resources Board through its Diesel Risk Reduction Program has implemented, and will implement additional, control measures that affect the construction phase of the project. These include: truck idling limitations, stationary and portable engine emission control programs, accelerated low-sulfur fuel availability, public vehicle fleet accelerated retrofit and replacement regulations, (pending) private truck fleet regulations, and (pending) off-road equipment fleet accelerated retrofit and replacement regulations. This program will provide reduction of risks to public health through the reduction of construction and operational emissions.

Biological Environment

2.8 NATURAL COMMUNITIES

This section of the document discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. This section also includes information on wildlife corridors and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value.

Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act are discussed in the Threatened and Endangered Species section. Wetlands and other waters are also discussed above in the Wetlands and Other Waters section.

Affected Environment

The Draft Natural Environment Study (NES) was completed in June 2009. The biological study area (BSA), which includes the project footprint and action area, is the area evaluated in this document for potential effects to natural resources from the proposed roadway project. The project footprint, action area, and BSA are defined and distinguished as follows, from the least inclusive to the most inclusive: (1) project footprint: the area directly affected by the proposed project, as depicted on the Preliminary Project Plans (Appendix F); (2) action area: the area directly or indirectly affected by the proposed project; and (3) BSA: the area including both the project footprint and action area, but extending beyond these areas in order to capture effects to species that might migrate through the site or to encompass resources that could be affected through slight changes in project designs. The BSA is shown as delineated in the NES.

Vegetation communities are assemblages of plant species that occur together in the same area, defined by species composition and relative abundance. Six vegetation communities have been identified within the BSA: California annual grassland, coyote brush/California annual grassland, California buckwheat/California annual grassland, coast sagebrush/California annual grassland, cattail series, and coyote brush scrub. The acreage of each vegetation community is summarized in Table 9 below.

Table 9: Area of Vegetation Communities in Acres Within the BSA

Vegetation Community	Acres
California annual grassland	99.36
Coyote brush/California annual grassland	16.99
California buckwheat/California annual grassland	1.10
Coast Sagebrush/California annual grassland	1.33
Cattail series	0.05
Coyote brush scrub	7.67
Total Vegetated Area within the BSA	126.52
Developed (paved roadway and shoulder)	47.80
Total Area with the BSA	174.33

California Annual Grassland Series

The majority of the BSA is characterized as California annual grassland. The extent of this series covers the entire project area, primarily on the eastbound road shoulder, but also within the median. This series is found throughout California and typically contains a mix of native and non-native herbs and grasses and few to no shrubs or trees. Non-native grasses such as ripgut brome, softchess, wild oat, and rattail fescue dominate the area within the BSA. The area also contains a number of weedy herbs such as yellow star thistle, prickly lettuce, Italian thistle, and black mustard. The specific species composition varied throughout the project area, but was most frequently dominated by ripgut brome. A number of various sized burrows (likely ground squirrel, but potentially also larger mammals) were noted throughout this vegetation community. In total, this community type covers approximately 99.36 acres within the BSA.

Coyote Brush/California Annual Grassland Series

Scattered areas of coyote brush/California annual grasslands occur throughout the project area. Occurrences are mostly located in the center of the BSA on both the eastbound road shoulder and also within the median. This series is distinguished from California annual grassland series by having 25-50 percent cover of coyote brush. In addition to coyote brush, a large number of non-native grasses typical of the California annual grassland series are present. Typically, dominant herb species include ripgut brome and Italian thistle. In total, this community type covers approximately 16.99 acres within the BSA.

California Buckwheat/California Annual Grassland Series

Several small areas of California buckwheat/California annual grassland occur in the center of the BSA. This series is distinguished from California annual grassland series by having at least 25 percent cover of buckwheat. Two species of buckwheat occur at within the BSA, California buckwheat and nude buckwheat. While buckwheat is dominant in this community type, a large number of non-native grasses typical of the California annual grassland series are also present. Other dominant species include ripgut brome and wild oat. In total, this community type covers approximately 1.10 acres within the BSA.

Coast Sagebrush/California Annual Grassland Series with Rock Outcroppings

This vegetation community occurs on approximately 1.33 acres of the BSA where a landslide had resulted in a steep slope with an exposed rock surface. This community occurs in a large area near the middle of the BSA. There is a small patch south of this location. The rock surface had approximately 80 percent total vegetative cover. In addition to the rock, several paved areas lined the rock face; these areas were likely installed to increase hillside stability by facilitating drainage. This area was dominated by weedy, non-native species that also occur in the California annual grassland series, but also contained a number of native coastal scrub species. Dominant species for this community included the weedy herbaceous species Italian thistle, ripgut brome, and black mustard. However, some areas had higher percentages of native herbs such as California buckwheat, lupine, and California sagebrush. Herbaceous species occupied a greater portion of the landscape compared to grass species as observed elsewhere in the BSA. The large percentage of herbaceous scrub species, along with the prevalence of rock outcroppings, distinguish this community from the annual grassland and coastal sage scrub communities.

Cattail Series

One small hillside seep occurs within the BSA. This small community, which occurs on approximately 0.05 acres, is located near the middle of the BSA. This area appears to be perennially wet (flowing water was observed in early September), but does not have the topography to pond water. The area is heavily dominated by narrow-leaved cattail, an obligate wetland species. Other species in this community include bristly ox tongue and yellow sweetclover, which grew around the edges of the wet area. This feature, including its jurisdictional status, is described in more detail in the Wetlands and Other Waters section of this document.

Coyote Brush Series

The area delineated as coyote brush series was dominated by coyote brush with greater than 50 percent cover. This community type is found in a large patch at the northern end of the BSA within the median. This vegetation community differs from the coyote brush/California annual grassland series described above in the high amount of shrub cover and reduced amount of low herbaceous cover. This community primarily occurred within the highway median and, due to safety concerns, was surveyed from across the roadway. It is expected that the other species in this community would include those found in the adjacent California grassland series. In total, this community type covers approximately 7.67 acres within the BSA.

Roadway/Paved/Shoulder

The roadway and adjoining paved areas and shoulders are highly disturbed and provide little to no value for wildlife species. These areas are included within the BSA, but are not considered a vegetation community or habitat for species in this NES.

Environmental Consequences

The potential temporary and permanent effects to vegetation communities from roadway construction associated with the Project are presented in Table 10 below. Temporary effects to habitat are those that can be restored and revegetated within one year after the completion of construction. Permanent effects to habitat include those areas lost due to activities such as increased paved surface, which will remain after construction is complete, or effects that will last more than one year. None of these effects are significant or adverse.

Table 10: Effects to Vegetation Communities within the BSA			
Vegetation Community	Type of effect (Acres)		Total Area Acres
	Permanent	Temporary	
California annual grassland	0.04	7.92	7.95
Coyote Brush/California annual grassland	0.0	4.70	4.70
California buckwheat/California annual grassland	0.16	0.31	0.47
Coast sagebrush/California annual grassland	0.12	.97	1.09
Cattail series	0.05	0.0	0.05
Coyote brush scrub	0.0	0.29	0.29
Total	0.37	14.19	14.56

Avoidance, Minimization, and/or Mitigation Measures

General measures that the Department will implement during construction to avoid and minimize effects to biological resources are summarized in Appendix C - Minimization and Mitigation Summary.

2.9 WETLANDS AND OTHER WATERS

Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Clean Water Act (33 U.S.C. 1344) is the primary law regulating wetlands and waters. The Clean Water Act regulates the discharge of dredged or fill material into waters of the United States, including wetlands. Waters of the United States include navigable waters, interstate waters, territorial seas and other waters that may be used in interstate or foreign commerce. To classify wetlands for the purposes of the Clean Water Act, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils subject to saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the Clean Water Act.

Section 404 of the Clean Water Act establishes a regulatory program that provides that no discharge of dredged or fill material can be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the U.S. Army Corps of Engineers (USACE) with oversight by the United States Environmental Protection Agency (USEPA).

The Executive Order for the Protection of Wetlands (E.O. 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, this executive order states that a federal agency, such as the Federal Highway Administration, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: 1) that there is no practicable alternative to the construction and 2) the proposed project includes all practicable measures to minimize harm.

At the state level, wetlands and waters are regulated primarily by the Department of Fish and Game (CDFG) and the Regional Water Quality Control Boards (RWQCB). In certain circumstances, the Coastal Commission (or Bay Conservation and Development Commission) may also be involved. Sections 1600-1607 of the Fish and Game Code require any agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify CDFG before beginning construction. If the CDFG determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. CDFG jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the USACE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the CDFG.

The Regional Water Quality Control Boards were established under the Porter-Cologne Water Quality Control Act to oversee water quality. The RWQCB also issues water quality certifications in compliance with Section 401 of the Clean Water Act. Please see the Water Quality section for additional details.

Affected Environment

The Draft NES was completed in June 2009. A wetland delineation was conducted in March 2009 and a Jurisdictional Wetland Delineation Report is pending approval by the USACE.

The delineation encompassed all potential wetlands and other waters within the BSA, excluding those that were evaluated as part of the eastbound and westbound I-580 High Occupancy Vehicle (HOV) projects. The survey included both the south side of I-580 and the median. Methods used include those set forth in the USACE regulations (33 CFR 328) and the *Interim Regional Supplement to Corps of Engineers Wetland Delineation Manual: Arid West Regional Supplement*. (Environmental Laboratory 1987, USACE 2006). This delineation resulted in permanent and temporary impacts to wetland and other waters, shown in Figure 5 of the Draft NES.

Wetlands

One wetland feature, which is potentially jurisdictional under the USACE and the SWRCB, was identified within the BSA between Post Miles 7.1 and 7.2 (see Figure 5, Sheet 4 in the Draft NES for location). This wetland contains cattail vegetation, as described in the Natural Communities section, and is classified under the Cowardin system as a palustrine persistent emergent wetland (Cowardin et al. 1979).

The identified palustrine persistent emergent wetland totals approximately 0.05 acres. Palustrine persistent emergent wetlands are typically dominated by perennial plants such as trees, shrubs, and persistent emergents. On the Pacific Coast, palustrine persistent emergent wetlands are composed of such species as cattails, bulrushes, sedges, reed, and broad-leaved persistent emergents such as purple loostrife, dock, and species of smartweeds. The palustrine persistent emergent wetland feature within the project footprint is dominated by the cattail series vegetation. Saturated soils in the wetland and water flowing towards a drainage inlet met the wetland hydrology criterion. Soils were clay textured and met the wetland soils criteria of having depleted matrix with low chroma soil coloration and redoximorphic features.

The wetland consists of a small (0.05 acres), perennially wet area, located on the side of I-580, very near the roadway. The wetland is fed by a hillside seep and was created with the construction and expansion of I-580. Prior to the road construction, water from this seep was likely retained underground, draining to underground aquifers and/or groundwater. Currently, the water emerges from the hillside and saturates soils along the roadway. Soils are thought to be perennially saturated, and, at some times of the year, water flows downhill from the wetland into a roadside storm drainage inlet.

This feature is delineated as a wetland and is determined to be potentially jurisdictional under the USACE and the SWRCB. Because the wetland directly abuts a jurisdictional "other water of the U. S." (OWUS), a 'significant nexus' to a traditional navigable water is established. Water from the wetland is presumed to flow downhill (west), and then enters a roadside storm drain. Water in this drainage system flows west to Arroyo Seco Creek and eventually to San Francisco Bay.

This wetland feature meets the "waters of the state" definition as being groundwater/surface water within the state. By meeting this definition, this water is subject to the provisions of Section 401 of the Clean Water Act and the Porter-Cologne Act upon concurrence with the SWRCB. Since the project area is located on the boundary of two RWQCB districts,

applications regarding this and other water features within the project area will be submitted to the SWRCB.

Other Waters of the United States (OWUS)

Thirteen drainages are located within the BSA. Of these, ten features, primarily consisting of concrete lined roadside drainages, were determined to be jurisdictional. These drainages are intermittent and highly altered. Table 11 provides a summary of the other waters of the U.S. within the BSA.

Table 11: Potentially Jurisdictional OWUS and OWUS within the BSA							
Feature	Location	Creek Drainage	Permanent Impacts (ft ²)	Temporary Impacts (ft ²)	Linear feet	Width	Acreage (acrest)
OWUS Jurisdictional #1	PM 7.8-7.9	Arroyo Seco	0	0	129.74	2	0.01
OWUS Jurisdictional #2	PM 7.2	Arroyo Seco	0	728.42	641.80	2	0.03
OWUS Jurisdictional #3	PM 6.5-6.7	Arroyo Seco	0	0	878.84	2	0.04
OWUS Jurisdictional #4	PM 6.1	Mountain House	0	0	992.24	2	0.05
OWUS Jurisdictional #5	PM 5.5-5.7	Mountain House	19.47	251.95	1125.32	2	0.05
OWUS Jurisdictional #6	PM 5.0	Mountain House	0	68.69	215.84	2	0.01
OWUS Jurisdictional #7	PM 4.9	Mountain House	0	0	451.23	2	0.02
WUS Jurisdictional #1	PM 5.1-5.4	Mountain House	0	0	3770.74	5	0.43
WUS Jurisdictional #2	PM 4.9-5.1	Mountain House	70.18	50.77	3823.97	5	0.44
Wetland/water Jurisdictional #1	PM 8.1-8.6	Arroyo Seco	0	0	2421.41	2	0.11
TOTAL EFFECTS			89.64ft ² (0.002 ac)	1099.84ft ² (0.025 ac)			1.19

All drainage features ultimately connect to traditional navigable waters (TNW), i.e., San Francisco and San Pablo Bays. Water flows from the project area into culverts, which carry water under I-580 and discharge into an engineered storm drainage system. The storm drainage system on the west side of the Altamont Pass flows to Arroyo Seco, then to Alameda Creek and ultimately to the San Francisco Bay. The storm drainage system east of the Altamont Pass flows to Mountain House Creek and ultimately to the San Joaquin River. Due to this connectivity, these features are considered to be potentially jurisdictional for both the USACE and the RWQCB. Since the project area is located on the boundary of two RWQCB districts, applications regarding this and other water features within the project area will be submitted to the SWRCB. No other streams or open water features lie within the BSA.

Environmental Consequences

The project will result in the permanent removal of 0.002 acres of palustrine wetland and temporary removal of 0.025 acres of OWUS and "waters of the State" through the road widening and retaining wall installation.

This impact to the palustrine wetland will be reduced to less than significant and not adverse with the implementation of the minimization and mitigation measures outlined below. OWUS and "waters of the State" are expected to only be temporarily disturbed and will be returned to pre-construction condition. As the majority of these drainages are concrete lined and provide little habitat to wildlife, effects to wildlife resulting from the temporary removal of these drainages are considered minimal.

Avoidance, Minimization, and/or Mitigation Measures

The proposed project plans will minimize effects to wetlands or other waters of the U.S. and waters of the State to the greatest extent possible through implementation of Department BMPs, working during peak low flows (June 15th to October 15th) and incorporating applicable water quality measures during the construction period. In addition to the general measures that will be implemented during construction to avoid and minimize effects to biological resources (Appendix C – Minimization and Mitigation Summary), the Department will install environmentally sensitive area (ESA) fencing to delineate protected areas and to restrict workers and equipment to the designated construction areas.

The following additional measures will be implemented to minimize water quality effects:

Control Erosion - Silt fencing (or filter fabric) will be used to contain any short-term erosion or sedimentation that may inadvertently occur. Measures may include but are not limited to the use of sediment basins, hay bales, and silt fences.

Construction Window - Work within identified other waters of the U.S. and waters of the State will be conducted during the dry season (April 15th to October 15th). Extension of this work window is dependant on weather and consultation with the SWRCB and the USACE. Work may continue within these features on a weekly basis if no rain is forecasted.

The palustrine wetland feature is within the temporary impact area of the project. Effects to this wetland are considered permanent because it would not be restored within one year of construction. The wetland is located along a hillside that will be cut as part of the road widening. Wetland features may redevelop in the area with time, but restoration will not occur within one year.

Compensatory Mitigation

The permanent effects to 0.05 acres of palustrine emergent wetlands may be mitigated at a 2:1 ratio, or 0.10 acres. The mitigation would occur through development of on- or off-site mitigation plans that may include restoration, enhancement, or creation and may consist of purchasing of credits from an USACE or SWRCB approved wetland mitigation bank. Due to the minimal nature of this effect, mitigation will be achieved on-site through the conversion of concrete lined drainages to vegetated drainages. This mitigation will be developed potentially as part of the Section 404 application subject to review and approval by the USACE, or as part of the Stormwater Pollution Prevention Plan (SWPPP) and Section 401 permit application that are both subject to SWRCB review and approval.

The effects to OWUS will be temporary in nature and mitigated on-site with the restoration of temporarily disturbed drainage channels. These features provide little function and value during the dry season and therefore are expected to be unaffected by the project. Due to

the implementation of avoidance and minimization measures, no indirect effects to waters outside of the project footprint are anticipated, and therefore, no mitigation is proposed for these features.

2.10 PLANT SPECIES

Regulatory Setting

The U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) share regulatory responsibility for the protection of special-status plant species. "Special-status" species are selected for protection because they are rare and/or subject to population and habitat declines. Special status is a general term for species that are afforded varying levels of regulatory protection. The highest level of protection is given to threatened and endangered species; these are species that are formally listed or proposed for listing as endangered or threatened under the Federal Endangered Species Act (FESA) and/or the California Endangered Species Act (CESA). Please see the Threatened and Endangered Species section in this document for detailed information regarding these species.

This section of the document discusses all the other special-status plant species, including CDFG fully protected species and species of special concern, USFWS candidate species, and non-listed California Native Plant Society (CNPS) rare and endangered plants.

The regulatory requirements for FESA can be found at United States Code 16 (USC), Section 1531, et seq. See also 50 CFR Part 402. The regulatory requirements for CESA can be found at California Fish and Game Code, Section 2050, et seq. Department projects are also subject to the Native Plant Protection Act, found at Fish and Game Code, Section 1900-1913, and the California Environmental Quality Act, Public Resources Code, Sections 2100-21177.

Affected Environment

The Draft NES was completed in June 2009. There are five special-status plant species that are recognized by California Native Plant Society (CNPS), but are not federally or state listed, that have the potential to occur in the project area. These species include the big tarplant, diamond-petaled California poppy, stinkbells, chaparral ragwort and caper-fruited tropidocarpum. The affected environment, environmental consequences and avoidance, minimization and/or mitigation measures for each species is discussed below with more detailed information located in the Draft NES.

While it is unlikely that these species occur in the project area, their presence cannot be discounted because of the timing of rare plant surveys. Additional rare plant surveys should be conducted to confirm the presence or absence of these species.

Big tarplant

Affected Environment

The big tarplant is a CNPS (seriously endangered in California) annual herb that is endemic to the Diablo foothills and surrounding valleys within Contra Costa, Alameda, and San Joaquin Counties. This species blooms from July to October and has white composite flowers on stalks that reach 3 feet tall.

Although the big tarplant was not observed during site visits, the species is found within Alameda County and has recorded occurrences within approximately five miles of the BSA (CDFG 2008). Rare plant surveys were conducted outside of its blooming period. So, while the species was not observed, its absence cannot be confirmed. However, this species was also not identified during the vegetation community assessment or initial site reconnaissance, both of which occurred during the blooming period. Suitable habitat within the median area was not surveyed for this species. Potential for occurrence is low, but additional summer rare plant surveys are needed prior to a final determination regarding presence.

Environmental Consequences

Implementation of the project is not likely to affect the big tarplant, and effects not significant or adverse. The following avoidance and minimization measures are sufficient to minimize any effects to individuals.

Avoidance, Minimization, and/or Mitigation Measures

- No herbicides, pesticides, or fertilizers will be applied within 50 feet of areas that are occupied by any big tarplant located on-site.
- Disturbance of potential habitat will be avoided, to the maximum extent possible.
- No sod-forming or non-native invasive plants will be planted.
- Topsoil that is disturbed during construction will be, when possible, replaced to promote the survival of any dormant seeds of the big tarplant that may be present within the seed bank.

Diamond-petaled California poppy

Affected Environment

The diamond-petaled California poppy is a CNPS 1B.1 (seriously endangered in California) annual herb that is a California endemic found on valley and foothill grassland in alkaline and clay soils. This species blooms from March to April, and has orange petals, large elongate seed pods, and deeply lobed glaucous leaves.

The nearest California Natural Diversity Database (CNDDDB) occurrence is approximately 7.3 miles from the BSA. This population grows on annual grassland on a steep west-facing slope similar to habitats found within the BSA. Suitable habitat for this species is present within the BSA.

The diamond-petaled California poppy was not observed during the late spring rare plant survey. However, this species may not have been observed in the BSA because the rare plant survey was conducted outside of the species recognized bloom period. A supplemental early season rare plant surveys would be required to determine if this species is presence or absence from the BSA.

Environmental Consequences

Implementation of the project is not likely to affect the diamond-petaled California poppy and effects are not significant or adverse. The following avoidance and minimization measures are sufficient to minimize any effects to individuals.

Avoidance, Minimization, and/or Mitigation Measures

- No herbicides, pesticides, or fertilizers will be applied within 50 feet of areas that are occupied by any diamond-petaled California poppy located on-site.
- Disturbance of potential habitat will be avoided, to the maximum extent possible.
- No sod-forming or non-native invasive plants will be planted.
- Topsoil that is disturbed during construction will be, when possible, replaced to promote the survival of any dormant seeds of the diamond-petaled California poppy that may be present within the seed bank.

Stinkbells

Affected Environment

Stinkbells is listed as a CNPS 4.2 (limited distribution) perennial bulb that is a California endemic found in chaparral, valley grassland, foothill woodland, and riparian habitats, typically in serpentine soils. Stinkbells blooms from March to May and has fleshy bell-shaped flowers which produce a fetid stench. The leaves are strap-like and glaucous.

Although stinkbells were not observed during the site visits, the species is found in Alameda County. The nearest occurrence is approximately 0.04 miles from the BSA, in the southwest quadrant of the interchange of Greenville Road and I-580. The population grows on annual grassland on a west-facing slope contiguous with the habitat in the BSA.

Stinkbells are assumed present within the BSA due to the proximity of a known occurrence, even though they were not observed in the rare plant survey. It is possible that this species had completed its blooming prior to the rare plant survey due to the early blooming season this year. A supplemental early season rare plant surveys would be required to determine if this species is present or absent within the BSA.

Environmental Consequences

Implementation of the project is not likely to affect stinkbells and effects are not significant or adverse. The following avoidance and minimization measures are sufficient to minimize any effects to individuals.

Avoidance, Minimization, and/or Mitigation Measures

- No herbicides, pesticides, or fertilizers will be applied within 50 feet of areas that are occupied by any stinkbells located on-site.
- Disturbance of potential habitat will be avoided, to the maximum extent possible.

- No sod-forming or non-native invasive plants will be planted.
- Topsoil that is disturbed during construction will be, when possible, replaced to promote the survival of any dormant seeds of stinkbells that may be present within the seed bank.

Chaparral ragwort

Affected Environment

The chaparral ragwort (also known as the rayless ragwort) is an annual herb that is listed as a CNPS 2.2 (rare, threatened, or in endangered in California; common elsewhere) species. It occurs in foothill woodland, Coastal scrub, and coastal sage scrub from central and southern California. One of its remaining current populations in California is located at the edge of the San Joaquin Valley in Alameda County. The chaparral ragwort blooms from January to April. The flower heads of this aster are indistinct, lacking rays, and are borne on branches a few inches high. Its leaves are thin and grayish-brown.

Although no chaparral ragworts were located during spring rare plant surveys, marginal habitat occurs within the BSA. The nearest extant population occurs approximately 5.4 miles from the BSA at Corral Hollow Road.

Environmental Consequences

Implementation of the project is not likely to affect the chaparral ragwort and effects are not significant or adverse. The following avoidance and minimization measures are sufficient to minimize any effects to individuals.

Avoidance, Minimization, and/or Mitigation Measures

- No herbicides, pesticides, or fertilizers will be applied within 50 feet of areas that are occupied by any chaparral ragworts located on-site.
- Disturbance of potential habitat will be avoided, to the maximum extent possible.
- No sod-forming or non-native invasive plants will be planted.
- Topsoil that is disturbed during construction will be, when possible, replaced to promote the survival of any dormant seeds of chaparral ragworts that may be present within the seed bank.

Caper-fruited tropidocarpum

Affected Environment

The caper-fruited tropidocarpum, *Tropidocarpum capparideum*, is listed by the CNPS as a 1B.1 (rare, threatened, or endangered in California and elsewhere) species. Its native habitat includes alkaline soils from low hills and valley grasslands, below 1,460 feet in the interior of Central California (CNPS, 2009). As of the year 2000, the caper-fruited tropidocarpum was presumed to be extinct, having not been recorded since 1957. In 2000, it was rediscovered at Fort Hunter-Liggett, Monterey County. The caper-fruited

tropidocarpum is threatened by invasive grasses, grazing, military activities, and trampling (CNPS, 2009). This annual herb has small yellow flowers borne on open racemes and blooms from April to May.

No caper-fruited tropidocarpum were located during spring rare plant surveys. An occurrence of caper-fruited tropidocarpum occurs within 0.87 miles of the BSA. The population is presumed to remain extant and marginal habitat for the caper-fruited caparideum is found within the BSA.

Environmental Consequences

Implementation of the project is not likely to affect the caper-fruited tropidocarpum and effects are not significant or adverse. The following avoidance and minimization measures are sufficient to minimize any effects to individuals.

Avoidance, Minimization, and/or Mitigation Measures

- No herbicides, pesticides, or fertilizers will be applied within 50 feet of areas that are occupied by any caper-fruited tropidocarpum located on-site.
- Disturbance of potential habitat will be avoided, to the maximum extent possible.
- No sod-forming or non-native invasive plants will be planted.
- Topsoil that is disturbed during construction will be, when possible, replaced to promote the survival of any dormant seeds of caper-fruited tropidocarpum that may be present within the seed bank.

2.11 ANIMAL SPECIES

Regulatory Setting

Many state and federal laws regulate impacts to wildlife. The U.S. Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Administration (NOAA) Fisheries and the California Department of Fish and Game (CDFG) are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with wildlife not listed or proposed for listing under the state or federal Endangered Species Act. Species listed or proposed for listing as threatened or endangered are discussed in the Threatened and Endangered Species section below. All other special-status animal species are discussed here, including CDFG fully protected species and species of special concern, and USFWS or NOAA Fisheries candidate species.

Federal laws and regulations pertaining to wildlife include the following:

- National Environmental Policy Act
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act

State laws and regulations pertaining to wildlife include the following:

- California Environmental Quality Act
- Sections 1600 – 1603 of the Fish and Game Code
- Section 4150 and 4152 of the Fish and Game Code

Affected Environment

The Draft NES was completed in June 2009. There are ten special-status wildlife species that are determined to have potential to occur within the BSA. These species include the American badger, burrowing owl, coast (California) horned lizard, golden eagle, loggerhead shrike, northern harrier, San Joaquin whipsnake, tricolored blackbird, western spadefoot toad and white-tailed kite. The affected environment, environmental consequences and avoidance, minimization and/or mitigation measures for each species is discussed below with more detailed information located in the Draft NES.

American badger

Affected Environment

The American badger is a State Species of Special Concern and is a burrowing mammal that historically ranged throughout California in open grasslands and generally treeless regions characterized by friable soils in drier open shrub land, open forest, and herbaceous habitats. American badgers typically occupy home ranges of between 2 to 850 acres, and utilize and/or excavate burrows for dens, escape, and predation (foraging).

A review of the CNDDDB (CDFG 2009) shows that the recognized range of the American Badger includes the BSA. Numerous occurrences have been recorded within a 10 mile radius of the BSA. The closest occurrence is located 550 feet south of the BSA.

The surrounding grasslands and presence of mammal burrows within and adjacent to the BSA indicate suitable habitat for this species. The many small mammals and reptiles, which also inhabit the surrounding hills, make up a healthy prey base for this species.

The Department has determined that this species and its habitat potentially occur within the BSA based on an analysis of the background research, existing biological conditions and the habitat requirements of this species. This species utilizes a variety of habitats, including those found within the BSA. However, neither this species nor its easily recognizable burrows have been observed within the BSA during multiple biological resource survey events.

Environmental Consequences

Effects to this species are not significant or adverse, and include both temporary and permanent effects to foraging, dispersal, and den areas. However, the habitat is of low value due to its proximity to the highway. Noise, light, and visual disturbance may also indirectly affect the American badger. However, these effects are expected to be negligible since the project area is already highly disturbed due to roadway traffic.

Avoidance, Minimization, and/or Mitigation Measures

The Department will implement general measures to avoid and minimize effects to biological resources (summarized in Appendix C - Minimization and Mitigation Summary), which include potential effects to the American badger. Additional measures to lessen the potential for adverse effects and further avoid and minimize effects to the American badger include:

Procedure for on-site discovery of the American badger during construction - If an American badger, or any animal that construction personnel believe may be an American badger, is encountered during project construction, or if any contractor, employee, or agency personnel inadvertently kills or injures an American badger, the following protocol shall be observed:

- All work that could result in direct injury, disturbance, or harassment of the individual animal will immediately cease.
- The resident engineer will be immediately notified.
- The resident engineer will notify the approved on-site biologist.
- The animal will be allowed to leave the site voluntarily. The biologist will contact the USFWS and CDFG within 24 hours.
- If an American badger has been killed or injured, the biologist will contact the USFWS and CDFG within 24 hours.

Entrapment avoidance - To prevent inadvertent entrapment of the American badger during construction, all excavated, steep-walled holes or trenches more than 2 feet deep will be covered with plywood or similar materials at the end of each working day. Holes or trenches will have one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. If, at any time, a trapped American badger is discovered, USFWS and CDFG will be contacted for guidance. USFWS shall be notified within one working day by telephone or email.

Capping/Inspection of pipes - Because the American badger is attracted to den-like structures, such as pipes, and may enter stored pipes and become trapped, all construction pipes, culverts, or similar structures with a diameter of 4 inches or greater that are stored at a construction site for one or more overnight periods will be either securely capped prior to storage or thoroughly inspected for the American badger before the pipe is subsequently buried, capped, or otherwise used or moved in any way. Any American badger found in a pipe or culvert shall be allowed to escape unimpeded.

Burrowing owl

Affected Environment

The burrowing owl is a California Species of Special Concern. The species occurs throughout the Central Valley, portions of the San Francisco Bay Area, the southern California Coast from southern California to the Mexican Border, the Imperial Valley, and in portions of the desert and high desert habitats in southeastern and northeastern California. They inhabit areas with low vegetation in agricultural fields, grasslands and desert

communities, and also occur in urban and suburban areas subject to regular human disturbance.

Although the burrowing owl was not observed on-site during biological surveys, the species has been recorded within Alameda County and within 5 miles of the BSA, including an occurrence of 18 burrowing owls observed in January 2007.

Small mammal burrows, which provide potential nesting and foraging habitat for burrowing owl, are present within the BSA. Although this species is unlikely to occur within the BSA, suitable breeding habitat for this species is present and the species could move into the BSA prior to project implementation.

Environmental Consequences

Implementation of the project may result in direct effects (i.e., nest disturbance or abandonment during incubation, nestling or fledging stages) and/or indirect effects (i.e., temporary shifts in foraging patterns or territories, noise or light pollution, winter burrow abandonment, etc.) to 14.56 acres of landscaped/agricultural lands in the BSA where small mammal burrowing activity has been observed. The burrowing owl may lose breeding, sheltering, and foraging habitat as a result of the project. In addition, individual burrowing owls could be directly or indirectly harmed during construction. Direct effects to the species would be avoided through the implementation of the following avoidance and minimization measures for this species. If habitat is affected, the mitigation measures outlined below will reduce this impact to less than significant and not adverse.

Avoidance, Minimization, and/or Mitigation Measures

The Department will implement general measures to avoid and minimize effects to biological resources (summarized in Appendix C - Minimization and Mitigation Summary), which include potential effects to the burrowing owl. Additional precautionary measures to ensure compliance with the Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703-712) and the California Fish and Game Code (§§3503, 3511, and 3513) are proposed to further lessen the potential effects to the burrowing owl. These additional measures include:

Burrowing owl preconstruction surveys will be conducted by a qualified biologist in accordance with CDFG's *Staff Report on Burrowing Owl Mitigation* (CDFG 1995) and the California Burrowing Owl Consortium's *Burrowing Owl Survey Protocol and Mitigation Guidelines* (CBOC 1993) within 30 days prior to the start of construction.

Preconstruction surveys, consisting of winter season surveys (between December 1 and January 31) and nesting season surveys (between April 15th and July 15th), will be conducted along the BSA and within a 500 foot buffer, where possible, to identify and map active burrowing owl burrows. Surveys will consist of walking transects of no more than 100 feet apart.

Occupied burrows will not be disturbed during the nesting season (February 1st through August 31st) unless a qualified biologist approved by CDFG verifies through noninvasive methods that either: (1) the birds have not begun egg-laying and incubation; or (2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival.

If burrowing owls are detected in the project footprint area or within 500 feet, a non-disturbance buffer will be established within a 160-foot radius surrounding occupied burrows during the non-breeding season (September 1st through January 31st) or within a 250-foot radius surrounding occupied burrows during the breeding season of February 1st through August 31st.

If avoidance is not feasible and owls must be moved away from the disturbance area, passive relocation techniques (as described below) will be used rather than trapping. At least one full week will be necessary to accomplish this and allow the owls to acclimate to alternate burrows.

- **Passive Relocation - With One-Way Doors**

Owls will be excluded from burrows in the immediate impact zone and within a 160 feet buffer zone by installing one-way doors in burrow entrances. One-way doors (e.g., modified dryer vents) will be left in place 48 hours to insure owls have left the burrow before excavation. Two natural or artificial burrows will be provided for each burrow in the project area that will be rendered biologically unsuitable. The BSA will be monitored daily for one week to confirm owl use of burrows before excavating burrows in the immediate impact zone. Whenever possible, burrows will be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe will be inserted into the tunnels during excavation to maintain an escape route for any animals inside the burrow.

- **Passive Relocation - Without One-Way Doors**

Two natural or artificial burrows will be constructed for each burrow in the project area that will be rendered unsuitable for use by burrowing owl. The project footprint area will be monitored daily until the owls have relocated to the new burrows. The formerly occupied burrows may then be excavated. Whenever possible, burrows will be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe will be inserted into burrows during excavation to maintain an escape route for any animals inside the burrow.

Compensatory Mitigation

A minimum of 6.5 acres of foraging habitat (calculated from a 300 feet foraging radius around the burrow) for each pair or unpaired resident bird shall be acquired and permanently protected to offset the loss of foraging and burrow habitat if burrowing owls are detected within the BSA during the nesting or winter season. The protected lands will be adjacent to occupied burrowing owl habitat and at a location acceptable to the CDFG. Protection of additional habitat acreage for each pair or unpaired resident bird may be applicable in some instances.

Existing unsuitable burrows shall be enhanced (enlarged or cleared of debris) or new burrows created (by installing artificial burrows) at a ratio of 2:1 on the protected lands site if destruction of occupied burrows is unavoidable.

The Department shall provide funding for long-term management and monitoring of the protected lands. The monitoring plan will include success criteria, remedial measures, and an annual report to CDFG.

Coast (California) horned lizard

Affected Environment

The Coast (California) horned lizard is listed as a California Species of Special Concern. The species occurs in open country, especially in gravelly or sandy areas, washes, flood plains and wind-blown deposits, sand dunes, and alluvial fans. Common habitats include valley foothill hardwood, conifer and riparian habitats, alkali flats, chaparral, as well as in pine-cypress, juniper, and annual grass habitats.

The Department has determined that the Coast (California) horned lizard and its habitat potentially occur within the BSA based on an analysis of background research, existing biological conditions and the habitat requirements of this species. This species utilizes a variety of habitats including those found within the BSA. However, this species has not been observed within the BSA during multiple biological resource survey events.

The review of the CNDDDB (CDFG 2009) records identified multiple occurrences of Coast horned lizards within 10 miles of the BSA. Most of the occurrences are southeast of the BSA.

Environmental Consequences

The project would result in removal of potentially suitable habitat for this species, but the effect is not significant or adverse. Implementation of the following avoidance and minimization measures would lessen the potential direct and indirect effects to this species.

Avoidance, Minimization, and/or Mitigation Measures

The Department will implement general measures to avoid and minimize effects to biological resources (summarized in Appendix C - Minimization and Mitigation Summary), which include potential effects to the Coast (California) horned lizard. A biological monitor will clear the project area prior to the start of all ground disturbing activities to minimize potential effects to this species.

Golden eagle

Affected Environment

The golden eagle is fully protected by the CDFG and under the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d, 54 Stat. 250), as amended, which prohibits the taking, possession, and commerce of eagles, their nests, eggs, or feathers, unless expressly authorized by permit pursuant to federal regulations. Golden eagles inhabit grasslands, savannahs, oak and pine woodlands, and agricultural fields. The species nests on cliffs and in large trees in open areas.

The review of the CNDDDB documents occurrences of the golden eagle within 10 miles of the BSA. The most recent occurrence is approximately 5 miles north of the BSA and consisted of one juvenile and two adults in July of 2008.

Suitable foraging habitat for the golden eagle is present both within and adjacent to the BSA. Although perching habitat is limited within the BSA, the surrounding grasslands and aquatic features create good habitat for its prey base and ideal locations for foraging. The proximity of the BSA to I-580 and significant human disturbances may limit the potential for

this species to occur or within the BSA. The habitat located outside of the BSA may be preferentially utilized for foraging activities since these areas are less disturbed. Golden eagles may utilize the BSA for foraging and dispersal purposes, but not likely for breeding. The Department has determined that project may does not support suitable breeding habitat, but does provide suitable upland foraging habitat based on an analysis of background research, existing biological conditions and the habitat requirements of this species.

Environmental Consequences

Implementation of the project would not result in the removal of suitable roosting trees or nesting tree sites, and would not result in effects to golden eagle breeding habitat. However, the project may result in the removal of marginal suitable foraging habitat. This habitat is considered marginal given its proximity to I-580 and human disturbed areas. In the unlikely event that the species forages within the BSA during construction, the golden eagle could be affected. The removal of the marginal habitat is not expected to have any adverse or significant effect on this species. No direct effects to this species are anticipated. Additionally, the implementation of the various avoidance and minimization measures would further lessen the degree and potential effects to this species.

Avoidance, Minimization, and/or Mitigation Measures

The Department will implement general measures to avoid and minimize effects to biological resources (summarized in Appendix C - Minimization and Mitigation Summary), which include potential effects to the golden eagle. In addition, the following species specific avoidance and minimization measures are recommended to comply with the MBTA:

A qualified biologist will conduct preconstruction bird surveys no more than two weeks prior to the start of construction for activities occurring during the breeding season (February 1st to August 31st) or during the wintering period (September 1st to January 31st) for sensitive wintering species.

If an active nest or roost is discovered, a non-disturbance buffer will be established at a distance sufficient to minimize disturbance. Buffer size will be determined in cooperation with the CDFG and the USFWS.

A qualified biologist will monitor nests for signs of disturbance if rescheduling work around active nests/roosts of special status bird species is infeasible. Work will cease immediately and the CDFG and the USFWS will be contacted if it is determined that project activities are resulting in nest/roost disturbance.

Loggerhead shrike

Affected Environment

The loggerhead shrike is a State species of special concern and is a resident of lowlands in California, and a migrant in the adjacent foothills. The species is found in grasslands, valley foothill hardwood, valley foothill hardwood-conifer, and valley foothill riparian habitats, preferring plant communities with open canopies. The loggerhead shrike nests in shrubs and trees with thick or thorny characteristics, and may also be found in croplands, but is rare in urban areas.

Loggerhead shrikes occur within a 10 mile radius of the BSA (CDFG 2009). Most occurrences are located southeast of the BSA. However, isolated occurrences are also located north and northwest of the BSA. The closest occurrence is approximately 6 miles east of the BSA.

Grasslands within the BSA provide suitable foraging habitat for loggerhead shrikes. Loggerhead shrikes may utilize the BSA for dispersal and foraging habitat. However, no suitable breeding habitat is present within the BSA.

Environmental Consequences

Implementation of the project would not result in the removal of nesting habitat. However, the project may⁴ result in the removal of marginal suitable foraging and dispersal habitat. This habitat is considered marginal given its proximity to I-580 and human disturbed areas. The removal of the marginal habitat is not expected to have any adverse or significant effect on the loggerhead shrike. No direct effects to this species are anticipated. Additionally, the implementation of the following avoidance and minimization measures would further lessen the degree and potential effects to this species.

Avoidance, Minimization, and/or Mitigation Measures

The Department will implement general measures to avoid and minimize effects to biological resources (summarized in Appendix C - Minimization and Mitigation Summary), which include potential effects to the loggerhead shrike. In addition, the following species specific avoidance and minimization measures are recommended to comply with the MBTA (16 U.S.C. 703-712):

A qualified biologist will conduct preconstruction bird surveys no more than two weeks prior to the start of construction for activities occurring during the breeding season (February 1st to August 31st) or during the wintering period (September 1st to January 31st) for sensitive wintering species.

If an active nest or roost is discovered, a non-disturbance buffer will be established at a distance sufficient to minimize disturbance. Buffer size will be determined in cooperation with the CDFG and the USFWS.

A qualified biologist will monitor nests for signs of disturbance if rescheduling work around active nests/roosts of special status bird species is infeasible. Work will cease immediately and the CDFG and the USFWS will be contacted if it is determined that project activities are resulting in nest/roost disturbance.

Northern harrier

Affected Environment

The northern harrier is a State Species of Special Concern and can inhabit a variety of habitats ranging from grasslands to alpine meadows. This species can be found breeding from the coast to the Sierra Nevada's and frequents grasslands, meadows, desert sinks, and saltwater emergent wetlands (CDFG 2005).

A review of the CNDDB (CDFG 2009) documented occurrences within 10 miles of the BSA. The occurrences are approximately 8 miles away and located on both the western and

eastern sides of the BSA. Suitable foraging habitat for this species is present within the BSA and there is potential for the northern harrier to utilize areas within the BSA. There is also potential for this species to nest within coyote brush vegetation and tall grasses throughout the BSA.

Environmental Consequences

Implementation of the project may result in the removal of marginal suitable foraging, nesting, and dispersal habitat. This habitat is considered marginal given its proximity to I-580 and human disturbed areas. The removal of the marginal habitat is not expected to have any adverse or significant effect on this species and the avoidance and minimization would minimize the chance for disturbance to nesting sites. No direct effects to this species are anticipated.* The implementation of the following avoidance and minimization measures would further lessen the degree and potential effects to this species.

Avoidance, Minimization, and/or Mitigation Measures

The Department will implement general measures to avoid and minimize effects to biological resources (summarized in Appendix C - Minimization and Mitigation Summary), which include potential effects to the northern harrier. In addition, the following species specific avoidance and minimization measures are recommended to comply with the MBTA (16 U.S.C. 703-712):

A qualified biologist will conduct preconstruction bird surveys no more than two weeks prior to the start of construction for activities occurring during the breeding season (February 1st to August 31st) or during the wintering period (September 1st to January 31st) for sensitive wintering species.

If an active nest or roost is discovered, a non-disturbance buffer will be established at a distance sufficient to minimize disturbance. Buffer size will be determined in cooperation with the CDFG and the USFWS.

A qualified biologist will monitor nests for signs of disturbance if rescheduling work around active nests/roosts of special status bird species is infeasible. Work will cease immediately and the CDFG and the USFWS will be contacted if it is determined that project activities are resulting in nest/roost disturbance.

San Joaquin whipsnake

Affected Environment

The San Joaquin whipsnake is a State Species of Special Concern and is most commonly found in grasslands, deserts, chaparral, scrub, and open terrain. The species seeks cover in small mammal burrows, under brush, and rock piles.

A review of the CNDDDB (CDFG 2009) documented multiple occurrences of the San Joaquin whipsnake within 10 miles of the BSA. Grassland and shrub vegetation within the BSA provide suitable dispersal habitat for this species. The presence of small mammal burrows and prey species indicate that San Joaquin whipsnake could den or aestivate in the BSA. Habitat is considered marginal due to the presence of roadway disturbance, but suitable habitat for this species is present. The San Joaquin whipsnake could utilize this habitat and occur within the BSA.

Environmental Consequences

Implementation of the project may result in the removal of marginal suitable foraging, nesting, and dispersal habitat. This habitat is considered marginal given its proximity to I-580 and human disturbed areas. The removal of the marginal habitat is not expected to have any adverse or significant effect on this species and the avoidance and minimization efforts would minimize the possibility for disturbance to nesting sites. No direct effects to the San Joaquin whipsnake are anticipated.

Avoidance, Minimization, and/or Mitigation Measures

The Department will implement general measures to avoid and minimize effects to biological resources (summarized in Appendix C - Minimization and Mitigation Summary), which include potential effects to the San Joaquin whipsnake. The following additional precautionary measures should be sufficient to avoid or minimize effects to the San Joaquin whipsnake.

A USFWS approved biologist with a valid 10(a)1(A) permit to handle the San Joaquin whipsnake will conduct a preconstruction survey of the work site 14 days prior to the start of construction activities, including vegetation clearing, grubbing, or other ground disturbance activities. The survey should consist of inspecting all suitable aestivation habitat (i.e., small mammal burrows, fissures) within the area that will be permanently or temporarily affected. If San Joaquin whipsnake adults or juveniles are found, all work that could result in direct injury, disturbance, or harassment of the individual animal will immediately cease. The biological monitor will contact the USFWS and the CDFG to determine whether relocating the species is appropriate. If the agencies approve of relocation, a USFWS approved biologist will be allowed sufficient time to move the species from the work site before construction activities begin. Only USFWS approved biologists may participate in activities associated with the capture, handling, and monitoring of the San Joaquin whipsnake.

A biological monitor will be on-site during ground disturbing activities to inspect for the San Joaquin whipsnake that may be unearthed. Should a San Joaquin whipsnake be identified, construction would be halted, the USFWS would be contacted, and the individual would be located by a permitted biologist prior to restarting construction with USFWS approval.

Tricolored blackbird

Affected Environment

The tricolored blackbird is a State Species of Special Concern and is highly colonial and most numerous in the vicinity of the Central Valley. It is largely endemic to California and requires open water, protected nesting substrate, and foraging areas with insect prey within a few kilometers of the colony.

A review of the CNDDDB (CDFG 2009) documented tricolored blackbirds in areas located east and west of the BSA. Occurrences range from two to eight miles in distance and observations are of the birds in numbers ranging from 45 individuals to 125 pairs.

Suitable foraging habitat for the tricolored blackbird is present within and adjacent to the BSA. However, no thorny or spiny shrubs occur within the BSA therefore no breeding habitat is present within the BSA.

Environmental Consequences

The project may result in the removal of marginal suitable foraging, nesting, and dispersal habitat. This habitat is considered marginal given its proximity to I-580 and human disturbed areas. The removal of the marginal foraging habitat is not expected to have any adverse or significant effect on this species. Avoidance and minimization measures will further ensure that the project does not affect the species.

Avoidance, Minimization, and/or Mitigation Measures

The Department will implement general measures to avoid and minimize effects to biological resources (summarized in Appendix C - Minimization and Mitigation Summary), which include potential effects to the tricolored blackbird. In addition, the following species specific avoidance and minimization measures are recommended to comply with the MBTA (16 U.S.C. 703-712):

A qualified biologist will conduct preconstruction bird surveys no more than two weeks prior to the start of construction for activities occurring during the breeding season (February 1st to August 31st) or during the wintering period (September 1st to January 31st) for sensitive wintering species.

If an active nest or roost is discovered, a non-disturbance buffer will be established at a distance sufficient to minimize disturbance. Buffer size will be determined in cooperation with the CDFG and the USFWS.

A qualified biologist will monitor nests for signs of disturbance if rescheduling work around active nests/roosts of special status bird species is infeasible. Work will cease immediately and the CDFG and the USFWS will be contacted if it is determined that project activities are resulting in nest/roost disturbance.

Western spadefoot toad

Affected Environment

The Western spadefoot toad is a State Species of Special Concern. This species is almost an entirely terrestrial species of toad, is primarily found in grasslands and may use vernal pools for breeding.

Review of the CNDDB (CDFG 2009) shows multiple occurrences documented within 10 miles of the BSA. The closest occurrences of this species are within 4 miles of the BSA.

Suitable foraging and dispersal habitat for the western spadefoot toad is present within and adjacent to the BSA. Suitable breeding habitat is present in the area surrounding the BSA. However, no breeding habitat is within the BSA.

Environmental Consequences

Both temporary and permanent effects will occur to western spadefoot toad dispersal and aestivation habitat. However, with the implementation of California red-legged frog (CRLF) mitigation efforts (see Threatened and Endangered Species section), as well as avoidance and minimization efforts, neither temporary nor permanent adverse or significant effects to the species are anticipated.

Avoidance, Minimization, and/or Mitigation Measures

The Department will implement general measures to avoid and minimize effects to biological resources (summarized in Appendix C - Minimization and Mitigation Summary), which include potential effects to the western spadefoot toad. In addition, the Department will implement the following precautionary measures to avoid or minimize effects to the western spadefoot toad.

Seasonal Avoidance - To the extent practicable, construction will not occur during the wet season, when the western spadefoot toad is more likely to disperse through upland habitats. Vegetation clearing may be done outside of this period, if necessary, to avoid disturbance to nesting birds.

Preconstruction Surveys - A qualified biologist will conduct a western spadefoot toad preconstruction survey of the work site 14 days prior to the start of construction activities, including vegetation clearing, grubbing, or other ground disturbance activities. If western spadefoot toad adults, tadpoles, or eggs are found, the biologist will contact the USFWS and CDFG to determine whether relocating the species is appropriate. If the agencies approve relocation, a USFWS approved biologist will be allowed sufficient time to move the species from the work site before work activities begin. Only USFWS approved biologists will participate in activities associated with the capture, handling, and monitoring of the western spadefoot toad.

Construction Area Delineation - Prior to any ground disturbance on the project site, the boundaries of the project area will be clearly delineated with orange-colored plastic high-visibility construction fencing (ESA fencing) or solid barriers to prevent workers or equipment from inadvertently straying from the project area.

Wildlife Exclusion Fencing - Exclusion fencing will be erected along each section of the project area before Project activities begin, including staging equipment and supplies. Fencing will be a minimum of 3 feet high and buried in the soil or form a tight seal with the pavement to prevent the western spadefoot toad from crawling under and entering the project area.

Procedure for Western Spadefoot Toad Discovery On-site - If a western spadefoot toad, or any amphibian that construction personnel believe may be this species, is encountered during project construction, or if any contractor, employee, or agency personnel inadvertently kills or injures a western spadefoot toad, the following protocol will be followed:

- All work that could result in direct injury, disturbance, or harassment of the individual animal will immediately cease.
- The resident engineer will be immediately notified.
- The resident engineer will notify the approved on-site biologist.
- The approved on-site biologist will immediately transport the western spadefoot toad in a cool, moist container to a suitable location outside the project area (e.g., suitable habitat adjacent to but outside of the BSA). A qualified biologist, in consultation with the USFWS and CDFG, will determine this relocation site in advance. The relocated individual(s) will be monitored until it is determined that predators or other dangers are not imperiling the animal(s).

- The approved on-site biologist will notify the USFWS within 24 hours after the western spadefoot toad has been relocated.
- The biologist will contact the USFWS and CDFG within 24 hours if a western spadefoot toad has been killed or injured.

Entrapment Avoidance - To prevent inadvertent entrapment of the western spadefoot toad or other animals during construction, all excavated, steep-walled holes or trenches more than 2 feet deep will be covered with plywood or similar materials at the end of each working day, or the holes or trenches will contain one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. If, at any time, a trapped western spadefoot toad or other wildlife is discovered, USFWS and CDFG will be contacted.

Prohibition of Erosion Control Materials Potentially Harmful to the Western Spadefoot Toad - Plastic monofilament netting (erosion control matting) or similar material will not be used at the project site because the western spadefoot toad may become entangled and trapped in it. Tightly woven fiber netting or similar material will be used for erosion control or other purposes.

Prevention of Introduction of Amphibian Diseases - Biologists will take all precautions to prevent spread of amphibian diseases when handling the listed species. All equipment and clothing will be disinfected per protocol standards.

Daily Work Area Surveys - The biological monitor will conduct daily surveys along the work area boundaries and will notify the USFWS approved biologist if the western spadefoot toad is found within the work area.

White-tailed kite

Affected Environment

The white-tailed kite, a California fully protected species, is a year round resident of Central and Coastal California, inhabiting grasslands, agriculture fields, oak woodlands, savannah and riparian habitats in rural and urban areas. The species breeds in a variety of habitats including grasslands, cultivated fields, oak woodlands, and suburban areas.

White-tailed kites were not observed on-site during the various biological resource surveys. This species has been recorded within approximately five miles of the BSA (CDFG 2008). There is potential for this species to utilize the grassland habitats within the BSA for both foraging and dispersal habitat. It is unlikely that the white-tailed kite would nest in the project area due to the lack of trees and water bodies within the project area.

Environmental Consequences

Implementation of the project may result in the removal of marginally suitable foraging and dispersal habitat. This habitat is considered marginal given its proximity to I-580 and human disturbed areas. The removal of the marginal habitat is not expected to have any adverse effect on the white-tailed kite and the avoidance and minimization would minimize the chance for disturbance to nesting sites. No direct adverse or significant effects to this species are anticipated. Additionally, the implementation of the various avoidance and

minimization measures would further lessen the degree and potential effects to the white-tailed kite.

Avoidance, Minimization, and/or Mitigation Measures

The Department will implement general measures to avoid and minimize effects to biological resources (summarized in Appendix C - Minimization and Mitigation Summary), which include potential effects to the white-tailed kite. In addition, the following species specific avoidance and minimization measures are recommended to comply with the MBTA (16 U.S.C. 703-712):

A qualified biologist will conduct preconstruction bird surveys no more than two weeks prior to the start of construction for activities occurring during the breeding season (February 1st to August 31st) or during the wintering period (September 1st to January 31st) for sensitive wintering species.

If an active nest or roost is discovered, a non-disturbance buffer will be established at a distance sufficient to minimize disturbance. Buffer size will be determined in cooperation with the CDFG and the USFWS.

A qualified biologist will monitor nests for signs of disturbance if rescheduling work around active nests/roosts of special status bird species is infeasible. Work will cease immediately and the CDFG and the USFWS will be contacted if it is determined that project activities are resulting in nest/roost disturbance.

2.12 THREATENED AND ENDANGERED SPECIES

Regulatory Setting

The primary federal law protecting threatened and endangered species is the Federal Endangered Species Act (FESA): 16 United States Code (USC), Section 1531, et seq. See also 50 CFR Part 402. This act and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as the Federal Highway Administration, are required to consult with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NOAA Fisheries) to ensure that they are not undertaking, funding, permitting or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 is a Biological Opinion or an incidental take permit. Section 3 of FESA defines take as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct."

California has enacted a similar law at the state level, the California Endangered Species Act (CESA), California Fish and Game Code, Section 2050, et seq. The CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project caused losses of listed species populations and their essential habitats. The California Department of Fish and Game (CDFG) is the agency responsible for implementing the CESA. Section 2081 of the Fish and Game Code prohibits "take" of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." The CESA

allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by the CDFG. For projects requiring a Biological Opinion under Section 7 of the FESA, the CDFG may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the Fish and Game Code.

Affected Environment

The Department initiates consultation with the USFWS when a project has the potential to affect a federally listed species and/or destroy or adversely modify designated critical habitat. No formal consultation with USFWS has occurred to date for this proposed project. Formal consultation with USFWS under the FESA will be initiated with the submission of the Biological Assessment prepared for the currently proposed project.

A Scientific Collecting Permit or agreements (Memorandum of Understanding) under the CESA or a letter of concurrence with the USFWS biological opinion may be required for the proposed project to authorize activities in special-status species habitat.

The Draft NES was completed in June 2009. The large-flowered fiddleneck is the endangered plant species listed under the FESA that is determined to have potential to occur within the BSA. The California red-legged frog, California tiger salamander, San Joaquin kit fox, longhorn fairy shrimp, vernal pool fairy shrimp, vernal pool tadpole shrimp and Swainson's hawk are the seven threatened and/or endangered animal species listed under the FESA and/or the CESA that are determined to have potential to occur within the BSA. The affected environment, environmental consequences and avoidance, minimization and/or mitigation measures for each species is discussed below with more detailed information located in the Draft NES.

Large-flowered fiddleneck

Affected Environment

The large-flowered fiddleneck is listed as endangered under the FESA, and is an annual herb that grows up to 2 feet tall with a blooming period from April to May. The historical distribution of Large-flowered fiddleneck included several locations in the inner South Coast Range and northern Diablo Range.

All remaining populations of these species are planted, with the exception of two occurrences including one at the Lawrence Livermore National Laboratory property near the City of Livermore, and another in a sensitive and undisclosed location near the City of Tracy. Habitat for this species includes cismontane woodland, and valley and foothill grassland on various soils. Annual grassland supporting other fiddleneck species and associated plant species are present within the BSA and is suitable habitat for the large-flowered fiddleneck. While suitable habitat for this species occurs within the BSA, there is low potential for this species to occur within the BSA given this species' restricted range and historical disturbances associated with I-580.

The nearest critical habitat for this species occurs 8 miles west of the BSA in the Dublin/Pleasanton region. Another critical habitat occurs 8.3 miles southeast of the BSA and a final critical habitat is located just west of the City of Tracy, approximately 9 miles from the BSA. The project does not occur within designated critical habitat for this species.

Environmental Consequences

Implementation of the project may result in the direct or indirect harm of individual large-flowered fiddlenecks, but no significant or adverse effects to the species are expected. The following avoidance and minimization measures are sufficient to minimize any effects to individuals.

Avoidance, Minimization, and/or Mitigation Measures

The following measures will be implemented to avoid and minimize indirect or direct effects to any individual large-flowered fiddleneck found in the project area.

- For any FESA listed plant populations that are located during construction, exclusion fences will be installed along the margins of the work area wherever the work area is located 50 feet or less from the avoided plant populations. Fencing will be installed prior to ground-disturbing activities. Avoided plant populations will be clearly marked to prevent inadvertent encroachment into the avoided areas during construction. All fencing will remain in place until all construction activities are completed.
- As recommended by the USFWS, a buffer width of 50 feet will be utilized to protect the FESA listed plant populations at all locations within and adjacent to the BSA.
- No herbicides, pesticides, or fertilizers will be applied within 50 feet of areas that are occupied by any large-flowered fiddleneck located on-site.
- Disturbance of potential habitat will be avoided, to the maximum extent possible.
- No sod-forming or non-native invasive plants will be planted.
- Topsoil that is disturbed during construction will be, when possible, replaced to promote the survival of any dormant seeds of large-flowered fiddleneck that may be present within the seed bank.

California red-legged frog

Affected Environment

The California red-legged frog (CRLF), federally listed as threatened, is distributed throughout 26 counties in California, but is common in the San Francisco Bay Area. California red-legged frogs predominately inhabit permanent water sources such as streams, lakes, marshes, natural and manmade ponds, and ephemeral drainages in valley bottoms and foothills up to 4,900 feet in elevation. The closest known CRLF critical habitat is 3.5 miles north of the BSA. Proposed CRLF critical habitat surrounds the BSA and at one location intersects the BSA, but the proposed critical habitat does not overlap the project footprint area.

Suitable breeding habitat for the California red-legged frog was not identified within the BSA based on the result of the reconnaissance level CRLF habitat survey conducted. However, the survey did identify suitable breeding habitat in close proximity to the BSA and determined that the BSA would provide suitable upland aestivation and dispersal habitat for this species.

A review of the CNDDB search results identified 162 CRLF records within ten miles of the BSA (CDFG 2009). Of those occurrences, 114 have been reported north of I-580 and 48 have been reported south of I-580.

Although no aquatic habitat suitable for breeding CRLF was observed within the BSA, suitable breeding habitat is present at several locations just south of the BSA. Approximately 43 ponds, stock ponds, reservoirs, and water bodies were identified within a 1-mile radius of the BSA. These aquatic features are within the potential range of migrating CRLF based on the occurrences reported within a 1-mile radius (the known migratory range of the species). These ponds likely provide suitable breeding habitat while the surrounding grasslands provide upland habitat, refugia, and aestivation habitat. All upland areas within the BSA are within the dispersal distance of known populations. These ponds may also act as migratory and dispersal corridors on a metapopulation level.

The BSA is located along a corridor of non-native annual grassland in the Mount Diablo foothills. In considering the CRLF on a metapopulation level, I-580 may act as a significant barrier to north-south migratory and dispersal movement. The CRLF may attempt to cross the roadway or seek out movement corridors that offer safe passage around or under the roadway.

Two culverts provide partial passage below the I-580 eastbound lane between the central median and the grasslands south of the BSA. Although these culverts do not provide direct connectivity across I-580, it may facilitate east-west migratory and dispersal movement in the vicinity of I-580. If CRLF are able to successfully cross the westbound lane, north-south migratory and dispersal movement could occur through these culverts from the median to the grasslands in the south.

The nearest designated critical habitat is 3.5 miles from the BSA. The habitat is 3,650 acres and located in northwestern Alameda County and southern Contra Costa County, north of I-580 and west of the City of Dublin. The habitat provides aquatic habitat for breeding and non-breeding activities and upland habitat for foraging and dispersal activities.

Environmental Consequences

If the CRLF is present in the BSA during construction, take may occur in the form of capture, harm, harassment, injury, and mortality to adult California red-legged frog from habitat loss and degradation, construction related disturbance, and capture and relocation. The project will result in 14.19 acres of temporary and 0.37 acres of permanent impacts to potential CRLF dispersal and upland habitat provided by non-native grass/native grassland, and grazed/ruderal. The 14.56 acres of habitat located within the project footprint is considered low quality due to its location beside a large highway, the I-580 migration barrier, and because of regularly occurring disturbances. Temporary effects include disturbance and trampling due to clearing and equipment access, and permanent effects include habitat loss due to roadway widening and soil nail wall construction. No permanent or temporary effects to CRLF breeding habitat are anticipated. All existing culverts will remain in place and allow amphibian passage under part of the roadway.

The following avoidance, minimization and mitigation measures will be employed for the CRLF to reduce these impacts to less than significant and not adverse.

Avoidance, Minimization, and/or Mitigation Measures

The Department will implement the following precautionary measures to avoid or minimize effects to the CRLF due to the proximity of habitat and documented occurrences of the CRLF in the vicinity of the BSA.

Seasonal Avoidance - To the extent practicable, construction will not occur during the wet season, when the CRLF is more likely to disperse through upland habitats. Vegetation clearing may be done outside of this period, if necessary, to avoid disturbance to nesting birds.

Preconstruction Surveys - A qualified biologist will conduct a CRLF preconstruction survey of the work site 14 days prior to the start of construction activities, including vegetation clearing, grubbing, or other ground disturbance activities. If CRLF adults, tadpoles, or eggs are found, the biologist will contact the USFWS and CDFG to determine whether relocating the species is appropriate. If the agencies approve relocation, a USFWS approved biologist will be allowed sufficient time to move the species from the work site before work activities begin. Only USFWS approved biologists will participate in activities associated with the capture, handling, and monitoring of the CRLF.

Construction Area Delineation - Prior to any ground disturbance on the project site, the boundaries of the project area will be clearly delineated with orange-colored plastic high-visibility construction fencing (ESA fencing) or solid barriers to prevent workers or equipment from inadvertently straying from the project area.

Wildlife Exclusion Fencing - Exclusion fencing will be erected along each section of the project area before Project activities begin, including staging equipment and supplies. Fencing will be a minimum of 3 feet high and buried in the soil or form a tight seal with the pavement to prevent the CRLF from crawling under and entering the project area.

Procedure for CRLF Discovery On-site - If a CRLF, or any amphibian that construction personnel believes to be this species, is encountered during project construction, or if any contractor, employee, or agency personnel inadvertently kills or injures a CRLF, the following protocol will be followed:

- All work that could result in direct injury, disturbance, or harassment of the individual animal will immediately cease.
- The resident engineer will be immediately notified.
- The resident engineer will notify the approved on-site biologist.
- The approved on-site biologist will immediately transport the CRLF in a cool, moist container to a suitable location outside the project area (e.g., suitable habitat adjacent to but outside of the BSA). A qualified biologist, in consultation with the USFWS and CDFG, will determine this relocation site in advance. The relocated individual(s) will be monitored until it is determined that predators or other dangers are not imperiling the animal(s).
- The approved on-site biologist will notify the USFWS within 24 hours after the CRLF has been relocated.

- If a CRLF has been killed or injured, the biologist will contact the USFWS and CDFG within 24 hours.

Entrapment Avoidance - To prevent inadvertent entrapment of the CRLF or other animals during construction, all excavated, steep-walled holes or trenches more than 2 feet deep will be covered with plywood or similar materials at the end of each working day, or the holes or trenches will contain one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. If, at any time, a trapped CRLF or other wildlife is discovered, the USFWS and CDFG will be contacted.

Prohibition of Erosion Control Materials Potentially Harmful to the CRLF - Plastic monofilament netting (erosion control matting) or similar material will not be used at the project site because the CRLF may become entangled and trapped in it. Tightly woven fiber netting or similar material will be used for erosion control or other purposes.

Prevention of Introduction of Amphibian Diseases - Biologists will take all precautions to prevent spread of amphibian diseases when handling the listed species. All equipment and clothing will be disinfected per protocol standards.

Daily Work Area Surveys - The biological monitor will conduct daily surveys along the work area boundaries and will notify the USFWS-approved biologist if the CRLF is found within the work area.

Compensatory Mitigation

Because the presence of the CRLF is inferred throughout habitats located within the BSA, all temporary and permanent effects to suitable habitat will be mitigated. The Department proposes to mitigate for the temporary and permanent effects to upland habitat for this species. Permanent effects (0.37 acres) would be mitigated at a 3:1 ratio for a total of 1.11 acres. Temporary effects (14.19 acres) would be mitigated at a 1.1:1 ratio, or 15.61 acres. Approximately 14.19 acres (1:1 ratio) will be mitigated on site through the restoration of the temporarily disturbed on-site habitats following construction. The remaining 1.42 acres (or 0.1:1 ratio) for temporary effects and 1.11 acre for permanent effects (a total of 2.38 acres) will be mitigated at an off-site location to be determined through consultation with the USFWS. Total on-site and off-site mitigation for effects to habitat for the CRLF will be 16.72 acres.

California tiger salamander

Affected Environment

The California tiger salamander (CTS) is a large, terrestrial salamander with a black body and white to yellow spots and bars. The California tiger salamander's Central California Distinct Population Segment (DPS) is federally listed as threatened. The CTS is a state candidate for endangered status, which requires that it receive the same protection as if endangered status already exists. The BSA does not overlap with designated critical habitat for the CTS. The closest critical habitat unit is approximately 4.5 miles west of the BSA.

The CTS inhabits lowland grasslands, oak savannah, and mixed woodland habitats, and require vernal pools, seasonal ponds, or semi-permanent calm waters that pond water for a minimum of 3 to 4 months in duration for breeding and larval maturation, and adjacent

upland habitat with small mammal burrows for aestivation. California tiger salamanders are at risk due to loss of habitat from development of agriculture and grazing lands, habitat fragmentation, and introduction of predatory exotic species.

A review of the CNDDDB search identified 182 CTS records documented within a 10-mile radius of the BSA (CDFG 2009). Of those occurrences, 115 have been reported north of I-580 and 67 have been reported south of I-580.

No suitable breeding habitat for the CTS was observed within the BSA. However, 62 ponds, stockponds, reservoirs, and water bodies have been identified within a 1.24-mile radius of the BSA that may provide suitable breeding habitat. Furthermore, the grasslands within and adjacent to the BSA may provide upland, refugia, and aestivation habitat. The ponds may also act as migratory and dispersal corridors on a metapopulation level. The CTS may migrate from these water features and utilize upland habitat that lie within the BSA.

Within the BSA, two culverts provide partial passage below the I-580 eastbound lane between the central median and the grasslands south of the BSA. Although these culverts do not provide direct connectivity across I-580, they may facilitate north-south migratory and dispersal movement in the vicinity of I-580 and, if the CTS is able to successfully cross the westbound lane, north-south migratory and dispersal movement could occur through the median between grasslands to the north and south.

Environmental Consequences

If the CTS is present in the BSA during construction activities, a take may occur in the form of capture, harm, harassment, injury, and mortality from habitat loss and degradation, construction related disturbance, capture or relocation. The project will result in 14.19 acres of temporary and 0.37 acres of permanent impacts to the potential CTS upland habitat. The project will not affect breeding habitat, which does not occur within the BSA. Temporary effects include disturbance and trampling due to clearing and equipment access, noise, and vibrations. Permanent effects include habitat loss of upland habitat associated with roadway widening and soil nail wall construction, and entombment.

The project may incrementally affect the potential for the CTS to disperse across I-580. It is unlikely for the CTS to successfully disperse across I-580 given the number of lanes and high level of vehicular traffic. All existing culverts will remain in place and allow amphibian passage under part of the roadway.

The following avoidance, minimization and mitigation measures will be employed for the CTS to reduce these impacts to less than significant and not adverse.

Avoidance, Minimization, and/or Mitigation Measures

The close proximity of potential CTS breeding, upland and dispersal habitat within and in the vicinity of the BSA results in greater potential for the species to be affected by the project. Precautionary measures to avoid or minimize effects provided for the CRLF that are previously mentioned, and the following precautionary measures should be sufficient to avoid or minimize effects to the CTS.

A USFWS approved biologist with a valid 10(a)(1)(A) permit to handle the CTS will conduct a preconstruction survey of the work site 14 days prior to the start of construction activities, including vegetation clearing, grubbing, or other ground disturbance activities. The survey

should include inspection of all suitable aestivation habitat (i.e., small mammal burrows, fissures) within the area that will be permanently or temporarily affected. If CTS adults or juveniles are found, all work that could result in direct injury, disturbance, or harassment of the individual animal will immediately cease. The biological monitor will contact the USFWS and CDFG to determine whether relocating the species is appropriate. If the agencies approve of relocation, a USFWS approved biologist will be allowed sufficient time to move the species from the work site before construction activities begin. Only USFWS approved biologists may participate in activities associated with the capture, handling, and monitoring of the CTS.

A biological monitor will be on-site during ground disturbing activities to inspect for the CTS that may be unearthed. Should a CTS be identified, construction would be halted, the USFWS would be contacted, and the individual would be located by a permitted biologist prior to restarting construction with USFWS approval.

Compensatory Mitigation

All temporary and permanent effects to suitable habitat will be mitigated because the presence of the CTS is inferred throughout habitats located in the BSA. There will be 0.37 acres of permanent effects compensated for at a 3:1 ratio, which will result in 1.11 acres of mitigation for the CTS. There will be 14.19 acres of temporary and construction effects that will be mitigated at a ratio of 1.1:1 of landscaped/agricultural lands, for a total 15.61 acres. As per the discussion for CRLF, 14.19 acres of temporarily disturbed area will be restored upon project completion and will be used as on-site mitigation for this species. The remaining temporary and permanent mitigation required off-site is 2.53 acres. Total on-site and off-site mitigation for the CTS will be 16.72 acres.

San Joaquin kit fox

Affected Environment

The San Joaquin kit fox (SJKF) is listed as endangered under the FESA and listed as threatened under the CESA. The SJKF prefers habitat consisting of annual grasslands or open grassy portions of vegetation with mixed scrub and small brush. There is no designated critical habitat for the SJKF within or within 10 miles of the BSA.

A total of 99.36 acres of non-native annual grasslands were identified within the BSA that provides marginal, but suitable, dispersal habitat for the SJKF based on the results of the reconnaissance level habitat surveys. While no dens were observed in the BSA, the BSA and surrounding area does contain suitable denning habitat. Suitable dispersal habitat is present within the BSA should denning occur in the vicinity.

In addition, a review of the CNDDDB identified 36 SJKF occurrences within 10 miles of the BSA (CDFG 2008). Of those occurrences, 28 have been reported north of I-580 and 8 have been reported south of I-580.

In considering the SJKF on a metapopulation level, I-580 bisects a significant corridor of non-native annual grassland in the Mount Diablo foothills. While I-580 acts as a significant barrier to north-south migratory and dispersal movement, the SJKF may cross the roadway or seek out movement corridors that offer safe passage around or under the roadway.

Two movement corridors potentially provide passage from the median to the grasslands south of I-580. The culverts pass underneath the eastbound lane. Although these culverts do not provide direct connectivity across I-580, they may facilitate north-south dispersal across the east bound I-580 lanes and, if the SJKF is able to successfully cross the westbound I-580 lanes, north-south migratory and dispersal movement via the median to the north and south may be possible. Unidentified fresh mammal tracks and scat were observed inside the western culvert, which suggests that at least one culvert acts as a movement corridor for small mammals in the region.

Environmental Consequences

If the SJKF is present within the BSA during construction, a take may occur in the form of harm, harassment, injury or mortality from habitat loss and degradation and construction related disturbances. Implementation of the project will result in temporary disturbance of 14.24 acres and permanent removal of 0.32 acres of potentially suitable upland habitat dispersal and migration habitat for the SJKF. The potentially suitable habitat is not ideal due to its proximity to a heavily traveled highway and noise/light effects.

Temporary effects to the species include disturbance due to clearing and equipment access, noise and vibrations. Permanent effects include loss of dispersal and migration habitat (although migration habitat is very poor within the project footprint) associated with the roadway widening and retaining wall construction.

The project may incrementally affect the potential for the SJKF to disperse or migrate across I-580. However, it is very unlikely for the SJKF to successfully disperse across I-580 given number of lanes and high level of vehicular traffic. All existing culverts will remain in place and allow mammal passage under part of the roadway.

The following avoidance, minimization and mitigation measures will be employed for the SJKF to reduce these impacts to less than significant and not adverse.

Avoidance, Minimization, and/or Mitigation Measures

The Department will implement general measures to avoid and minimize effects to biological resources (summarized in Appendix C - Minimization and Mitigation Summary) as well as the following additional measures, in order to lessen the potential for adverse effects and further avoid and minimize effects to the SJKF.

Procedure for on-site discovery of the SJKF during construction - If a SJKF, or any animal that construction personnel believe may be a SJKF, is encountered during project construction, or if any contractor, employee, or agency personnel inadvertently kills or injures a SJKF, the following protocol shall be observed:

- All work that could result in direct injury, disturbance, or harassment of the individual animal will immediately cease.
- The resident engineer will be immediately notified.
- The resident engineer will notify the approved on-site biologist.
- The animal will be allowed to leave the site voluntarily. The biologist will contact the USFWS and CDFG within 24 hours.

- If a SJKF has been killed or injured, the biologist will contact the USFWS and CDFG within 24 hours.

Entrapment avoidance - To prevent inadvertent entrapment of the SJKF during construction, all excavated, steep-walled holes or trenches more than two feet deep will be covered with plywood or similar materials at the end of each working day. Holes or trenches will have one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. If, at any time, a trapped SJKF is discovered, USFWS and CDFG will be contacted for guidance. USFWS shall be notified within one working day by telephone or email.

Capping/Inspection of pipes - Because the SJKF is attracted to den-like structures, such as pipes, and may enter stored pipes and become trapped, all construction pipes, culverts, or similar structures with a diameter of four inches or greater that are stored at a construction site for one or more overnight periods will be either securely capped prior to storage or thoroughly inspected for the SJKF before the pipe is subsequently buried, capped, or otherwise used or moved in any way. Any SJKF found in a pipe or culvert shall be allowed to escape unimpeded.

Compensatory Mitigation

All temporary and permanent effects to suitable dispersal and migration habitat will be mitigated because the presence of the SJKF is inferred throughout the BSA. The Department proposes to mitigate for the temporary and permanent effects to dispersal and migration habitat for this species.

Permanent effects would be mitigated at a 3:1 ratio, or 0.96 acres. Temporary effects would be mitigated at a 1.1:1 ratio, or 15.61 acres. Approximately 14.24 acres (1:1 ratio) of the temporary effects will be mitigated on site through the restoration of the on site habitats following construction. The remaining 1.42 acres (or 0.1:1 ratio) for temporary effects and 0.96 acres (3:1 ratio) for permanent effects will be mitigated at an off-site location to be determined through consultation with the USFWS. Total, off-site, mitigation for the SJKF will be 2.38 acres.

Longhorn fairy shrimp

Affected Environment

The longhorn fairy shrimp (LHFS) is listed as endangered under the FESA. LHFS are found in vernal pools and are endemic to the eastern margin of the central coast mountains in seasonally grassland vernal pools. LHFS are not restricted to one pool but can be connected through a group of pools or seasonal swales. They can also spread to artificial habitats during flooding and survive in environments such as roadside ditches, abandoned agricultural drains, ruts made by heavy equipment, or depressions between fire breaks. LHFS designated critical habitat is not present within the BSA. A designated critical habitat unit is located approximately 2 miles north of the BSA, and a review of the CNDDDB identified two LHFS occurrences within 10 miles of the BSA north of I-580.

A total of four areas located in overgrown drainage ditches were identified and mapped as marginally suitable habitat for LHFS based on the results of the reconnaissance level vernal pool habitat surveys. These areas are considered only marginal habitat due to their small size and unstable nature (compared to vernal pool habitat which is less flushing from floods). The total acreage of the four areas within the BSA is approximately 0.02 acres.

Marginally suitable habitat is present within the vicinity of the BSA. LHFS can spread to new areas through flood events and can lay dormant for years until the appropriated conditions to hatch are right. The results of the reconnaissance level vernal pool habitat surveys indicate that this species is potentially present within the 0.02 acres of suitable habitat located within the BSA.

Environmental Consequences

Implementation of the project will result in the temporary removal of 0.01 acres and permanent removal of less than 0.001 acres of potentially suitable LHFS habitat. This habitat consists of roadside ditches that may collect LHFS inhabiting nearby vernal pools that lie outside of the BSA during rain events. This effect is not significant or adverse.

Avoidance, Minimization, and/or Mitigation Measures

Potentially suitable habitat for the LHFS is located within and in the vicinity of the BSA. Therefore, the implementation of the project could affect the species. The Department will implement general measures to avoid and minimize effects to biological resources, (summarized in Appendix C - Minimization and Mitigation Summary) and those identified for Wetland and Other Waters of the U.S and Waters of the State should be sufficient to avoid or minimize effects to LHFS. Construction of bioswales and the post construction restoration of drainage ditches will minimize effects to the LHFS. Additionally, the following precautionary measures will be implemented.

- Prior to the disturbance of areas identified as potential habitat for LHFS, the contractor will remove and conserve the top six inches of topsoil within the identified drainages. Upon restoration of these drainages, or construction of bioswales or vegetated drainages of equivalent hydrology, the contractor will restore this soil to the bed of the drainage. The conservation of soil will serve to mitigate effects by conserving cysts of LHFS that can become active following the establishment of an appropriate hydrology regime.
- Work within potential habitat will be limited to the dry season (April 15th to October 15th).
- LHFS habitat will be avoided to the maximum extent possible.

Vernal pool fairy shrimp/Vernal Pool tadpole shrimp

Affected Environment

The vernal pool fairy shrimp (VPFS) is listed as threatened under the FESA. The vernal pool tadpole shrimp (VPTS) is listed as endangered under the FESA. The VPFS and VPTS are both found in vernal pools and are endemic to the Central Valley, central coastal mountains, and southern coastal mountains. The VPFS and VPTS utilize similar habitats and have a similar range. The BSA is not located within designated critical habitat for the VPFS or VPTS. Although designated critical habitat for VPFS is located approximately 200 feet north of the BSA, designated critical habitat for VPTS is not located within 10 miles of the BSA.

Four areas were identified and mapped as marginally suitable habitat for VPFS and VPTS based on the results of the reconnaissance surveys. The habitat consisted of overgrown drainage ditches that had potential to collect and hold water during flood events. The total acreage of the four areas is approximately 0.02 acres within the BSA. Within the vicinity of

the BSA marginally suitable habitat is present. VPFS and VPTS can spread to new areas through flood events and can lay dormant for years until the appropriated conditions to hatch are right.

A review of the CNDDDB identified five VPFS occurrences within 10 miles of the BSA, but did not identify any VPTS occurrences within 10 miles of the BSA (CDFG 2009). The results of the reconnaissance survey indicate that both the VPFS and VPTS are potentially present within the 0.02 acres of suitable habitat located within the BSA.

Environmental Consequences

Implementation of the project will result in the temporary removal of 0.01 acres and permanent removal of less than 0.0001 acres of potentially suitable VPFS and VPTS habitat. This habitat consists of overgrown roadside ditches that may collect VPFS or VPTS inhabiting nearby vernal pools, which are located outside the BSA, during rain events. The habitat is not ideal, the potential for occurrence is low, and the effected area is very small. This effect is not significant or adverse.

Avoidance, Minimization, and/or Mitigation Measures

Potentially suitable habitat for the VPFS and VPTS is located within and in the vicinity of the BSA. Therefore, the implementation of the project could affect these species. The Department will implement general measures to avoid and minimize effects to biological resources, (summarized in Appendix C - Minimization and Mitigation Summary) and those identified for Wetland and Other Waters of the U.S and Waters of the State, and LHFS, should be sufficient to avoid or minimize effects to the VPFS and VPTS. Construction of bioswales and the post construction restoration of drainage ditches will minimize effects to the VPFS and VPTS.

Swainson's hawk

Affected Environment

The Swainson's hawk is listed as a threatened species under CESA. Its habitat consists of open grasslands adjacent to, or associated with riparian woodlands or oak savannah. Natural foraging areas consist of native grasslands, which include lightly grazed pastures such as alfalfa and other hay species, or certain grain and row croplands. Since the Swainson's hawk is not federally protected there is no critical habitat for this species.

A review of the CNDDDB, documented 23 Swainson's hawk occurrences between 7 and 10 miles west of the BSA (CDFG 2008). The BSA contains open grasslands that the Swainson's hawk could use for foraging. There are no large trees within the BSA that could be used for nesting, but the Swainson's hawk could migrate through the BSA.

Environmental Consequences

Foraging habitat for the Swainson's hawk occurs within the BSA and would be affected by the project, but restored following construction. Most of the anticipated effects are not significant or adverse, and temporary in nature. Individual Swainson's hawk dispersing throughout the project area could be affected by indirect effects such as noise, light, visual disturbances. There is no nesting habitat within the BSA and no trees will be removed.

Avoidance, Minimization, and/or Mitigation Measures

The Department will implement general measures to avoid and minimize effects to biological resources, (summarized in Appendix C - Minimization and Mitigation Summary) which will serve to limit potential effects to the Swainson's hawk.

2.13 INVASIVE SPECIES

Regulatory Setting

On February 3, 1999, President Clinton signed Executive Order 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as "any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health." Federal Highway Administration guidance issued August 10, 1999 directs the use of the state's noxious weed list to define the invasive plants that must be considered as part of the NEPA analysis for a proposed project.

Affected Environment

The Draft NES was completed in June 2009. The California Invasive Plant Council (Cal IPC) defines high priority invasive species as those species that "have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment" (Cal IPC 2006). High-priority invasive plant species include: wild oats, ripgut brome, perennial ryegrass, foxtail brome, fenel, black mustard, tower mustard and yellow star thistle.

Environmental Consequences

The invasive plant species listed above occur inside the BSA, primarily within the California annual grassland series and more ruderal portions of the BSA. Wild oats, ripgut brome, and perennial ryegrass are the most abundant in the BSA. The Department does not use the species on the California list of noxious weeds for erosion control or landscaping.

Avoidance, Minimization, and/or Mitigation Measures

To reduce the spread of invasive non-native plant species and minimize the potential decrease of palatable vegetation for wildlife species, the Department will comply with Executive Order 13112. In the event that high- or medium-priority noxious weeds are disturbed or removed during construction or construction-related activities, the contractor will contain the plant material associated with these noxious weeds and dispose of it in a manner that will not promote the spread of the species. Areas where noxious weeds are disturbed or removed will be immediately replanted with fast-growing native grasses or a native erosion control seed mixture. If seeding is not possible, the area will be covered with heavy black plastic solarization material until completion of the project.

Specific measures under that general heading could include developing an Invasive Weed Eradication Plan that targeted invasive species on the California Department of Food and Agriculture list, as well as other non-native, invasive species found on-site; preventing disposal of soil and plant materials from any areas that support invasive species into areas

that support stands dominated by native vegetation; using only native, non-invasive species or non-persistent hybrids for erosion control will consist of native, non-invasive species or non-persistent hybrids; washing all equipment prior to entering the BSA, and using gravel or fill from weed-free sources.

Construction Impacts

A Transportation Management Plan (TMP) will be required for this project. The TMP is a strategy that will be implemented during construction to minimize and prevent delay and inconvenience to the traveling public. The proposed construction and improvements will include temporary roadwork requiring lane closures or detouring. The TMP for this project will be developed in conjunction with the local jurisdictions, and be refined during PS&E and final design phases, and supported by detailed traffic studies to evaluate traffic operations. The need for necessary lane closures during off-peak hours or at nighttime, or short-term detour routes for ramp closures would be identified, as required.

The TMP would include press releases to give advance notice to motorists, businesses, community groups, local entities, emergency services providers, and politicians on upcoming construction activities and durations, detours, and access issues during the construction period. Various TMP elements such as portable changeable message signs and the California Highway Patrol's Construction Zone Enhanced Enforcement Program (COZEPP) would be utilized to minimize delay to the traveling public, and enhance safety.

Major traffic delays due to construction are not anticipated at this time because the majority of work consists of adding additional pavement width adjacent to the traveled way and constructing retaining walls. This work can be phased to maintain freeway access at all times and minimize impacts to local traffic.

Temporary night-time lane closures would be required for activities such as placing and removing temporary concrete barriers to separate construction work areas and traffic. Some short-term closures (from a few hours to a few days) of existing facilities may be necessary during construction. Any required lane closures would be limited to non-peak travel periods. Examples of tasks requiring lane closures include:

- Placing and removing temporary construction barriers
- Connecting or conforming to ramps to the mainline or local streets,
- Construction of conforms between existing and new roadways
- Paving operations
- Lane striping
- Shifting traffic due to widening adjacent to the existing inside and outside shoulder

Advance notice would be provided for ramp closures and traffic would be detoured to the adjacent interchanges for these events. To maintain traffic on I-580 and local streets, construction activities requiring traffic lane or ramp closures would not be permitted to occur simultaneously at adjacent interchanges.

At this time, no staging areas outside of the existing highway ROW would be required. Potential staging areas for the project include the Greenville Road off-ramp/on-ramp area, the North Flynn Road off-ramp truck break check area, the median area about 1,500 feet east of North Flynn Road interchange, the median area near the east end of the project, and/or the pullout area 800 feet east of the project limit.

The proposed project would generate air pollutants during the construction period, which is expected to last a total of two years. Trucks and construction equipment emit hydrocarbons, oxides of nitrogen, carbon monoxide and particulates. Most pollution will consist of wind-blown dust generated by excavation, grading, hauling and various other activities. The effects from the above activities would vary from day to day as construction progresses.

Climate Change

REGULATORY SETTING

While climate change has been a concern since at least 1988, as evidenced by the establishment of the United Nations and World Meteorological Organization's Intergovernmental Panel on Climate Change (IPCC), the efforts devoted to greenhouse gas¹ (GHG) emissions reduction and climate change research and policy have increased dramatically in recent years. In 2002, with the passage of Assembly Bill 1493 (AB 1493), California launched an innovative and pro-active approach to dealing with GHG emissions and climate change at the state level. AB 1493 requires the Air Resources Board (ARB) to develop and implement regulations to reduce automobile and light truck GHG emissions; these regulations will apply to automobiles and light trucks beginning with the 2009 model year.

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05. The goal of this Executive Order is to reduce California's GHG emissions to: 1) 2000 levels by 2010, 2) 1990 levels by the 2020 and 3) 80% below the 1990 levels by the year 2050. In 2006, this goal was further reinforced with the passage of Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that ARB create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including the recommendations made by the state's Climate Action Team.

With Executive Order S-01-07, Governor Schwarzenegger set forth the low carbon fuel standard for California. Under this executive order, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by 2020.

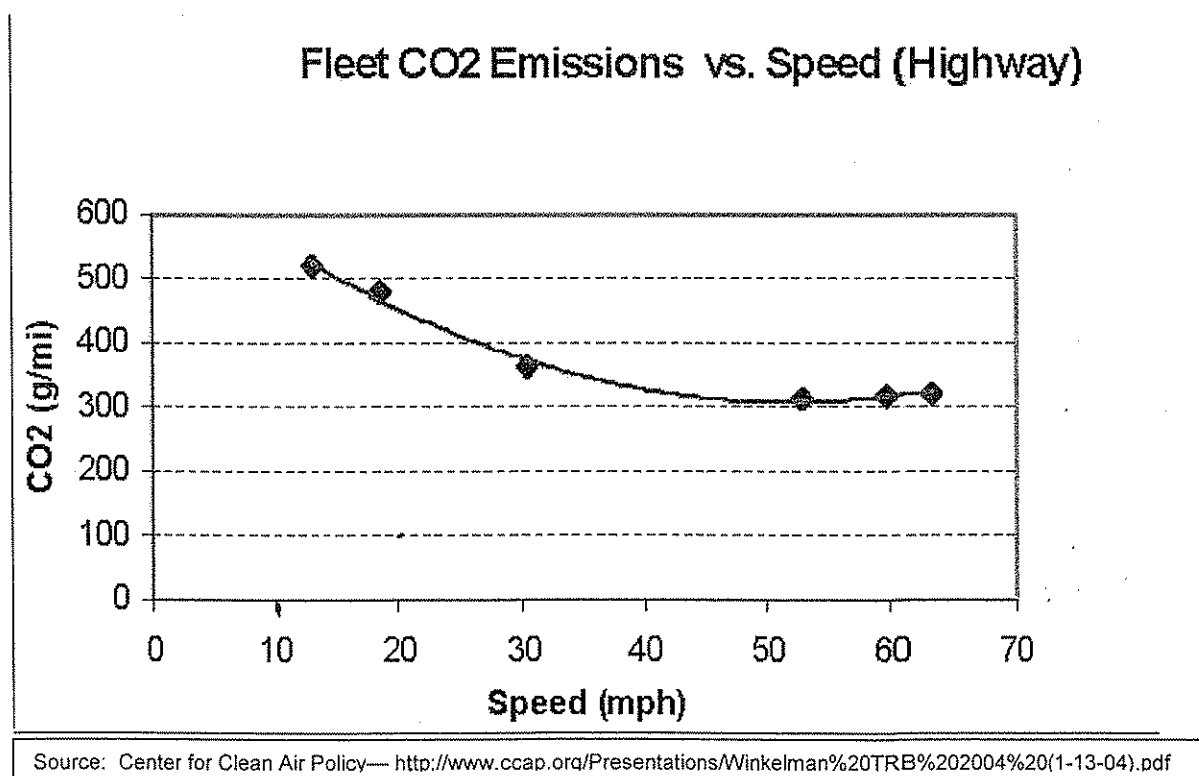
Climate change and GHG reduction is also a concern at the federal level; at this time, no legislation or regulations have been enacted specifically addressing GHG emissions reductions and climate change. However, California, in conjunction with several environmental organizations and several other states, sued to force the U.S. Environmental Protection Agency (USEPA) to regulate GHGs as a pollutant under the Clean Air Act (*Massachusetts vs. Environmental Protection Agency et al.*, U.S. Supreme Court No. 05-1120, 549 U.S. 497. Argued November 29, 2006—Decided April 2, 2007). The court ruled that GHGs do fit within the Clean Air Act's definition of a pollutant, and that the USEPA does have the authority to regulate GHGs. Despite the Supreme Court ruling, there are no promulgated federal regulations to date limiting greenhouse gas emissions.

¹ Greenhouse gases related to human activity, as identified in AB 32, include: Carbon dioxide, Methane, Nitrous oxide, Tetrafluoromethane, Hexafluoroethane, Sulfur hexafluoride, HFC-23, HFC-134a*, and HFC-152a*.

According to a recent white paper by the Association of Environmental Professionals², "an individual project does not generate enough greenhouse gas emissions to significantly influence global climate change. Global climate change is a cumulative impact; a project participates in this potential impact through its incremental contribution combined with the cumulative increase of all other sources of greenhouse gases.

The Department and its parent agency, the Business, Transportation, and Housing Agency, have taken an active role in addressing GHG emission reduction and climate change. Recognizing that 98 percent of California's GHG emissions are from the burning of fossil fuels and 40 percent of all human made GHG emissions are from transportation, the Department has created and is implementing the *Climate Action Program at Caltrans* (December 2006). Transportation's contribution to GHG emissions is dependent on 3 factors: the types of vehicles on the road, the type of fuel the vehicles use, and the time/distance the vehicles travel.

One of the main strategies in the Department's Climate Action Program to reduce GHG emissions is to make California's transportation system more efficient. The highest levels of carbon dioxide from mobile sources, such as automobiles, occur at stop-and-go speeds (0-25 miles per hour) and speeds over 55 mph; the most severe emissions occur from 0-25 miles per hour (see Figure below). Relieving congestion by enhancing operations and improving travel times in high congestion travel corridors will lead to an overall reduction in GHG emissions.



² Hendrix, Micheal and Wilson, Cori. *Recommendations by the Association of Environmental Professionals (AEP) on How to Analyze Greenhouse Gas Emissions and Global Climate Change in CEQA Documents* (March 5, 2007), p. 2.

The Department recognizes the concern that carbon dioxide emissions raise for climate change. However, accurate modeling of GHG emissions levels, including carbon dioxide at the project level, at the project level is not currently possible. No federal, state or regional regulatory agency has provided methodology or criteria for GHG emission and climate change impact analysis. Therefore, the Department is unable to provide a scientific or regulatory based conclusion regarding whether the project's contribution to climate change is cumulatively considerable."

The Department continues to be actively involved on the Governor's Climate Action Team as ARB works to implement AB 1493 and AB 32. As part of the *Climate Action Program at Caltrans* (December 2006), the Department is supporting efforts to reduce vehicle miles traveled by planning and implementing smart land use strategies: job/housing proximity, developing transit-oriented communities, and high density housing along transit corridors. The Department is working closely with local jurisdictions on planning activities; however, the Department does not have local land use planning authority. The Department is also supporting efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars, light and heavy-duty trucks. However it is important to note that the control of the fuel economy standards is held by the United States Environmental Protection Agency and ARB. Lastly, the use of alternative fuels is also being considered; the Department is participating in funding for alternative fuel research at the University of California Davis.

Chapter 3 – Comments and Coordination

Early and continuing coordination with the general public and appropriate public agencies is an essential part of the environmental process to determine the scope of environmental documentation, the level of analysis, potential impacts and mitigation measures and related environmental requirements. Agency consultation and public participation for this project have been accomplished through a variety of formal and informal methods, including project development team meetings and interagency coordination meetings. This chapter summarizes the results of the Department's efforts to fully identify, address and resolve project-related issues through early and continuing coordination.

The Department held Project Development Team (PDT) meetings with local and regional agencies including San Joaquin Council of Governments (SJCOG), ACCMA, MTC, and the City of Livermore. The PDT meetings help to identify the scope, schedule and funding sources for this project during the project initiation and project approval/environmental document (PA/ED) phases. Currently there is no known opposition against the project.

Chapter 4 – List of Preparers

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Office of Water Quality Program

Norman Gonsalves

William Kanemoto & Associates

William Kanemoto

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Katherine Caldwell

Chapter 5 – Distribution List

Alameda County Congestion Management Agency

Alameda County Planning Commission

Alameda County Transportation Authority (ACTA)/Alameda County Transportation Improvement Authority (ACTIA)

Alameda County Public Works

City of Livermore

- Mayor
- City Manager
- Planning & Community Development Department

Metropolitan Transportation Commission (MTC)

California Transportation Commission (CTC)

State Clearinghouse

State Water Resources Control Board (SWRCB)

U.S. Fish & Wildlife Service (USFWS)

California Department of Fish & Game (CDFG)

Livermore Public Library Civic Center Branch

Livermore Public Library Springtown Branch

Appendix A - CEQA Checklist

Supporting documentation of all CEQA checklist determinations is provided in Chapter 2 of this Initial Study/Environmental Assessment. Documentation of "No Impact" determinations is provided at the beginning of Chapter 2. Discussion of all impacts, avoidance, minimization, and/or compensation measures under the appropriate topic headings in Chapter 2.

This checklist identifies physical, biological, social and economic factors that might be affected by the proposed project. In many cases, background studies performed in connection with the projects indicate no impacts. A NO IMPACT answer in the last column reflects this determination. The words "significant" and "significance" used throughout the following checklist are related to CEQA, not NEPA, impacts.

Environmental Significance Checklist

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
I. AESTHETICS -- Would the project:				
a) Have a substantial adverse effect on a scenic vista?				X
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?				X
c) Substantially degrade the existing visual character or quality of the site and its surroundings?			X	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			X	
II. AGRICULTURE RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				X
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?				X
III. AIR QUALITY -- Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?				X
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?				X
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?				X
d) Expose sensitive receptors to substantial pollutant concentrations?				X
e) Create objectionable odors affecting a substantial number of people?				X
IV. BIOLOGICAL RESOURCES -- Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?		X		
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?				X
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?		X		
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?				X

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?				X
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?				X
V. CULTURAL RESOURCES -- Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?				X
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?				X
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?				X
d) Disturb any human remains, including those interred outside of formal cemeteries?				X
VI. GEOLOGY AND SOILS -- Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				X
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.				X
ii) Strong seismic ground shaking?				X
iii) Seismic-related ground failure, including liquefaction?				X
iv) Landslides?				X
b) Result in substantial soil erosion or the loss of topsoil?				X
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?				X
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?				X

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				X
VII. HAZARDS AND HAZARDOUS MATERIALS -Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?				X
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?				X
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				X
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				X
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?				X
VIII. HYDROLOGY AND WATER QUALITY –Would the project:				
a) Violate any water quality standards or waste discharge requirements?				X
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?				X

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?				X
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?				X
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?				X
f) Otherwise substantially degrade water quality?				X
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				X
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?				X
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?				X
IX. LAND USE AND PLANNING - Would the project:				
a) Physically divide an established community?				X
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				X
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?				X
X. MINERAL RESOURCES -- Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?				X

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XI. NOISE – Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?				X
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?				X
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?				X
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?				X
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				X
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				X
XII. POPULATION AND HOUSING -- Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				X
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				X
XIII. PUBLIC SERVICES				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				X

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI. UTILITIES AND SERVICE SYSTEMS – Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?				X
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				X
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?				X
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?				X
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?				X
g) Comply with federal, state, and local statutes and regulations related to solid waste?				X
XVII. MANDATORY FINDINGS OF SIGNIFICANCE –				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?				X
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?				X
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?				X

Appendix B. Title VI Policy Statement

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY

ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF TRANSPORTATION
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*Flex your power!
Be energy efficient!*

January 14, 2005

TITLE VI POLICY STATEMENT

The California Department of Transportation under Title VI of the Civil Rights Act of 1964 and related statutes, ensures that no person in the State of California shall, on the grounds of race, color, national origin, sex, disability, and age, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity it administers.

A handwritten signature in black ink, appearing to read "Will Kempton", followed by a horizontal line.

WILL KEMPTON
Director

"Caltrans improves mobility across California"

Appendix C – Minimization and Mitigation Summary

Visual/Aesthetics

Minimization measures for the retaining walls:

- Application of context sensitive wall texture and color treatment to reduce visual contrast and reflectivity, and enhance compatibility of visual character to the greatest extent feasible.
- For the median shoulder slippage wall, appropriate wall texture is likely to differ from that selected for uphill walls, therefore, wall texture will be selected to blend with the highway, and to minimize reflectivity, glare, and overall color contrast of the wall.
- Careful and optimal selection of wall color and value to minimize wall contrast in both summer and winter conditions.
- Restriction of grading and grubbing beyond wall to no more than 5 feet wherever feasible.
- Walls will not have gutters or chain-link safety fencing in order to reduce visual contrast.
- Minimization of overall wall height to the greatest extent feasible.
- Supervision by the Department during wall texturing.

Minimization measures for the RSP wire mesh revegetation:

- Application of hydroseeded revegetation, using seed mix to blend with the surrounding existing grassland setting.
- Wire mesh will be selected to match color and value of underlying substrate to the greatest feasible extent, i.e. light-colored mesh to cover light colored substrate, and dark mesh to cover dark substrate.

Minimization measure for shrub re-vegetation:

- Hydroseeded re-vegetation of all areas of disturbed soil surfaces from repair of the median shoulder slip, utilizing a seed mix that includes native shrub species to replace and enhance shrub cover lost to shoulder slip/wall construction.

Minimization measure for contour grading and slope rounding:

- Contour grading and slope rounding at slope transitions to minimize the artificial, engineered appearance of resulting slopes and to blend with the natural topography to the greatest feasible extent.

General minimization measures for construction:

- Unsightly material and equipment storage and staging will not be visible within the foreground of the highway corridor to the extent feasible. Where such siting is

unavoidable, material and equipment will be visually screened where feasible to minimize visibility from the roadway and nearby sensitive off-road receptors.

- Construction, staging, and storage areas will be screened where feasible by visually opaque screening wherever they will be exposed to public view for extended periods of time.
- Construction activities will be phased to minimize the duration of disturbance to the shortest feasible time.
- All areas disturbed by construction, staging, and storage will be re-vegetated per the re-vegetation minimization measure noted above.
- Construction activities will limit all construction lighting to within the area of work and avoid light trespass through directional lighting, shielding, and other measures as needed.

Hazardous Waste

The site investigation report will provide recommendations for the safe management of hazardous substances within this project's footprint.

Per the Department's standard requirement, the contractor will prepare a project specific lead compliance plan (LCP) to prevent or minimize worker exposure to lead contaminated soil. The plan will include protocols for environmental and personnel monitoring requirements for personal protective equipment and other appropriate health and safety procedures for the handling of lead-impacted soil.

Air Quality

To minimize air quality impacts from construction activities, control measures as specified in the Environmental Stewardship section of Department Standard Specifications - Section 14-9.01 Air Pollution Control and Section 14-9.02 Dust Control will be implemented.

The California Air Resources Board through its Diesel Risk Reduction Program has implemented, and will implement additional, control measures that affect the construction phase of the project. These include: truck idling limitations, stationary and portable engine emission control programs, accelerated low-sulfur fuel availability, public vehicle fleet accelerated retrofit and replacement regulations, (pending) private truck fleet regulations, and (pending) off-road equipment fleet accelerated retrofit and replacement regulations. This program will provide reduction of risks to public health through the reduction of construction and operational emissions.

Noise

Implementation of the following measures would minimize the temporary noise effects from construction:

- All equipment will have sound-control devices that are no less effective than those provided on the original equipment. No equipment will have an un-muffled exhaust.

- As directed by the Department, the contractor will implement appropriate additional noise mitigation measures, including: changing the location of stationary construction equipment, turning off idling equipment, rescheduling construction activity, notifying adjacent residents in advance of construction work, and installing acoustic barriers around stationary construction noise sources.

Water Quality

Best Management Practices (BMPs) and design elements of the project will be documented to demonstrate that project construction and operation will have minimal or no impact to existing water quality in Mountain House Creek and Arroyo Seco Creek.

The Department's Storm Water Coordination Branch will assess potential water quality impacts of the project alternatives through geometric design and investigate the potential incorporation of permanent treatment BMPs into the project to reduce the discharge of pollutants during and after construction to the Maximum Extent Practicable. These BMPs fall into three categories: Temporary Construction Site BMPs (BMPs that are applied during construction activities to control sedimentation, erosion, and the discharge of other pollutants), Permanent Design Pollution BMPs (BMPs to improve water quality by reducing erosion, stabilizing disturbed soil areas, and maximizing vegetated surfaces), Permanent Treatment BMPs (BMPs to receive storm water run-off from traveled ways and to treat prior to discharging beyond the highway ROW), and Maintenance BMPs.

The proposed project is not exempt from incorporating permanent Treatment BMPs. The Department's approved permanent treatment BMPs include: biofiltration systems (biofiltration strips and swales), infiltration basins, detention basins, traction, sand traps, dry weather flow diversions, media filters, gross solids removal devices, multi-chamber treatment trains and wet basins.

Hydro-modification requirements for this project may be met with the implementation of volume-based flow control structures, such as underground pipes and above ground basins with specially designed outlet structures. The project may also consider meeting hydro-modification requirements through the use of treatment controls that reduce flow rates by infiltration or evapotranspiration, such as bioswales.

Geology/Soils/Seismic/Topography

The catchment area for rocks falling from the steep high cut slopes will be removed during the project construction, and there will not be sufficient room to create a new catchment area. Therefore, the rock slope protection (RSP) measures of anchored wire mesh and drapery will be implemented.

Biological Resources

The Department will incorporate construction Best Management Practices (BMPs) and general avoidance and minimization measures into the proposed roadway construction project to reduce effects to sensitive biological resources. These measures will be communicated to the contractor via special provisions included in the bid package. General avoidance and minimization measures for biological resources include:

1. A qualified biologist will conduct preconstruction surveys in and around the project footprint to determine presence of sensitive animal species. In the event that

occupied burrows, nests, dens, or other habitats are found, the biologist will request a buffer be placed around the site to minimize disturbance or relocate the animal, in accordance with project permits and in consultation with the CDFG or the USFWS.

2. A qualified biologist will conduct an employee training program on the biology and ecology of sensitive species and habitats found in the project area and laws protecting these resources. The training will be provided to all construction personnel. The training will include materials describing sensitive resources, resource avoidance, permit conditions, and possible fines for violations of state or federal environmental laws. The program will cover the project's mitigation measures, environmental permits, and regulatory compliance requirements. Additional training will be conducted as needed including morning "tailgate" sessions to update crews as they advance into sensitive areas. In addition, a record of all personnel trained during the project will be maintained and made available for compliance verification.
3. Before construction activities begin, the contractor, in consultation with the biologist and in accordance with the project plans, will clearly demarcate environmentally sensitive areas (ESAs) in accordance with permit requirements.
4. The limits of the construction area will be clearly marked. Before commencing construction activities, the contractor will define construction vehicle parking areas and all access.
5. A qualified Biological Monitor will be present during all ground disturbing construction activities.
6. Vegetation will be removed between September 1st and January 31st, outside of the bird-nesting season, to the maximum extent practicable. If this is not possible, the nest avoidance requirements of the MBTA and CDFG Code will be observed.
7. Vegetation removal and cut-and-fill operations will be limited to the minimum necessary. Trees, snags, shrubs, other vegetation, and woody debris will be protected to the extent possible.
8. Silt fencing or other erosion control measures will be installed to prevent sediment and pollutant discharges to state and federal waters and wetlands.
9. Temporary erosion control measures will be implemented on all disturbed areas.
10. Permanent erosion control measures will be implemented upon completion of construction. All disturbed areas will be revegetated with appropriate native, non-invasive species or non-persistent hybrids that will serve to stabilize site conditions.
11. A Storm Water Pollution Prevention Plan (SWPPP) will be prepared by the Department or a subcontractor and will be implemented to minimize water pollution during project construction.
12. All material stockpiling and staging areas will occur within the project ROW in non-sensitive areas or at designated disturbed/developed areas outside of design construction zones.

13. Any borrow material will be certified to be non-toxic and weed free.
14. To eliminate attracting predators of protected species, all food-related trash items such as wrappers, cans, bottles, cigarette butts, and food scraps will be disposed of in solid, closed containers (trash cans) and will be removed at the end of each working day from the entire construction site.
15. Maintenance and refueling areas for equipment will be a minimum of 100 feet from active stream channels and drainages on designated disturbed/developed areas where accidental spills can be immediately contained.
16. Spill containment kits will be maintained on-site at all times during construction operations and/or staging or fueling of equipment.
17. Construction crews will be informed during the education program meeting that, to the extent possible, travel within the marked project site will be restricted to established roadbeds. Established roadbeds include all pre-existing and project-constructed unimproved, as well as improved roads.
18. To the extent possible, nighttime construction will be minimized to avoid effects to federally listed nocturnal species.
19. To reduce the spread of invasive non-native plant species and minimize the potential decrease of palatable vegetation for wildlife species, the Department will comply with Executive Order 13112.
20. In the event that high- or medium-priority noxious weeds are disturbed or removed during construction or construction-related activities, the contractor will contain the plant material associated with these noxious and dispose of it in a manner that will not promote the spread of the species. Areas where noxious weeds are disturbed or removed will be immediately replanted with fast-growing native grasses or a native erosion control seed mixture. If seeding is not possible, the area will be covered with heavy black plastic solarization material until the end of the project.

In addition, specific avoidance, minimization and mitigation measures have been identified to specific biological resources, and are outlined in this section.

Wetlands and Other Waters

Avoidance and Minimization Measures

The proposed project plans will have minimal effects to wetlands or "other waters of the U.S." and "waters of the State" to the greatest extent possible through implementation of Department BMPs, schedule of construction, work during peak low flows (June 15th to October 15th) and incorporation of applicable water quality measures during the construction period. The Department will install ESA fencing to delineate protected areas and to restrict workers and equipment to the designated construction areas.

The following additional measures will be implemented to minimize water quality effects:

Control Erosion - Silt fencing (or filter fabric) will be used to contain any short-term erosion or sedimentation that may inadvertently occur. Measures may include but are not limited to the use of sediment basins, hay bales, and silt fences.

Construction Window - Work within identified "other waters of the U.S." (OWUS) and "waters of the State" will be conducted during the dry season (April 15th to October 15th). Extension of this work window is dependant on weather and consultation with the SWRCB and the USACE. Work may continue within these areas on a weekly basis if no rain is forecasted.

The palustrine wetland feature is within the temporary impact area of the project. Effects to this wetland are considered permanent because it would not be restored within one year of construction. The wetland is located along a hillside that will be cut as part of the road widening. Wetland features may redevelop in the area with time, but restoration will not occur within one year.

Compensatory Mitigation

The permanent effects to 0.05 acres of palustrine emergent wetlands may be mitigated at a 2:1 ratio, or 0.10 acres. The mitigation would occur through development of on- or off-site mitigation plans that may include restoration, enhancement, or creation and may consist of purchasing of credits from a USACE or SWRCB approved wetland mitigation bank. Due to the minimal nature of this effect, mitigation will be achieved on-site through the conversion of concrete lined drainages to vegetated drainages. This mitigation will be developed potentially as part of the Section 404 application subject to review and approval by the USACE, or as part of the Stormwater Pollution Prevention Plan (SWPPP) and Section 401 permit application that are both subject to SWRCB review and approval.

The effects to OWUS will be temporary in nature and mitigated on-site with the restoration of temporarily disturbed drainage channels. These features provide little function and value during the dry season and therefore are expected to be unaffected by the project. Due to the implementation of avoidance and minimization measures, no indirect effects to waters outside of the project footprint are anticipated, and therefore, no mitigation is proposed for these features.

Big tarplant, Diamond-petaled California poppy, Stinkbells, Chaparral ragwort, Caper-fruited tropidocarpum

Avoidance and Minimization

- No herbicides, pesticides, or fertilizers will be applied within 50 feet of areas that are occupied by any of these species located on-site.
- Disturbance of potential habitat will be avoided, to the maximum extent possible.
- No sod-forming or non-native invasive plants will be planted.
- Topsoil that is disturbed during construction will be, when possible, replaced to promote the survival of any dormant seeds of these species that may be present within the seed bank.

American badger, San Joaquin kit fox (SJKF)

Avoidance and Minimization

Procedure for an on-site occurrence or encounter with an American badger or San Joaquin kit fox (SJKF) during construction includes the following protocol:

- All work that could result in direct injury, disturbance, or harassment of the individual animal will immediately cease.
- The resident engineer will be immediately notified.
- The resident engineer will notify the approved on-site biologist.
- The animal will be allowed to leave the site voluntarily, and the biologist will contact the USFWS and CDFG within 24 hours.
- If an American badger/SJKF has been killed or injured, the biologist will contact the USFWS and CDFG within 24 hours.

Entrapment avoidance - To prevent inadvertent entrapment of the American badger/SJKF during construction, all excavated, steep-walled holes or trenches more than 2 feet deep will be covered with plywood or similar materials at the end of each working day. Holes or trenches will have one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. If, at any time, a trapped American badger/SJKF is discovered, USFWS and CDFG will be contacted for guidance. USFWS shall be notified within one working day by telephone or email.

Capping/Inspection of pipes - Because the American badger/SJKF is attracted to den-like structures, such as pipes, and may enter stored pipes and become trapped, all construction pipes, culverts, or similar structures with a diameter of 4 inches or greater that are stored at a construction site for one or more overnight periods will be either securely capped prior to storage or thoroughly inspected for the American badger/SJKF before the pipe is subsequently buried, capped, or otherwise used or moved in any way. Any American badger/SJKF found in a pipe or culvert shall be allowed to escape unimpeded.

San Joaquin kit fox (SJKF)

Compensatory Mitigation

All temporary and permanent effects to suitable dispersal and migration habitat will be mitigated because the presence of the SJKF is inferred throughout the BSA. The Department proposes to mitigate for the temporary and permanent effects to dispersal and migration habitat for this species.

Permanent effects would be mitigated at a 3:1 ratio, or 0.96 acres. Temporary effects would be mitigated at a 1.1:1 ratio, or 15.61 acres. Approximately 14.24 acres (1:1 ratio) of the temporary effects will be mitigated on site through the restoration of the on site habitats following construction. The remaining 1.42 acres (or 0.1:1 ratio) for temporary effects and 0.96 acres (3:1 ratio) for permanent effects will be mitigated at an off-site location to be

determined through consultation with the USFWS. Total, off-site, mitigation for the SJKF will be 2.38 acres.

Burrowing owl

Avoidance and Minimization

Burrowing owl preconstruction surveys will be conducted by a qualified biologist in accordance with CDFG's *Staff Report on Burrowing Owl Mitigation* (CDFG 1995) and the California Burrowing Owl Consortium's *Burrowing Owl Survey Protocol and Mitigation Guidelines* (CBOC 1993) within 30 days prior to the start of construction.

Preconstruction surveys, consisting of winter season surveys (between December 1st and January 31st) and nesting season surveys (between April 15th and July 15th), will be conducted along the BSA and within a 500 foot buffer, where possible, to identify and map active burrowing owl burrows. Surveys will consist of walking transects of no more than 100 feet apart.

Occupied burrows will not be disturbed during the nesting season (February 1st through August 31st) unless a qualified biologist approved by CDFG verifies through noninvasive methods that either: (1) the birds have not begun egg-laying and incubation; or (2) that juveniles from the occupied burrows are foraging independently and are capable of independent survival.

If burrowing owls are detected in the project footprint area or within 500 feet, a non-disturbance buffer will be established within a 160-foot radius surrounding occupied burrows during the non-breeding season (September 1st through January 31st) or within a 250-foot radius surrounding occupied burrows during the breeding season of February 1st through August 31st.

If avoidance is not feasible and owls must be moved away from the disturbance area, passive relocation techniques (as described below) will be used rather than trapping. At least one full week will be necessary to accomplish this and allow the owls to acclimate to alternate burrows.

- **Passive Relocation - With One-Way Doors**

Owls will be excluded from burrows in the immediate impact zone and within a 160 feet buffer zone by installing one-way doors in burrow entrances. One-way doors (e.g., modified dryer vents) will be left in place 48 hours to insure owls have left the burrow before excavation. Two natural or artificial burrows will be provided for each burrow in the project area that will be rendered biologically unsuitable. The BSA will be monitored daily for one week to confirm owl use of burrows before excavating burrows in the immediate impact zone. Whenever possible, burrows will be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe will be inserted into the tunnels during excavation to maintain an escape route for any animals inside the burrow.

- **Passive Relocation - Without One-Way Doors**

Two natural or artificial burrows will be constructed for each burrow in the project area that will be rendered unsuitable for use by burrowing owl. The project footprint area will be monitored daily until the owls have relocated to the new burrows. The formerly occupied burrows may then be excavated. Whenever possible, burrows will be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe will be inserted into burrows during excavation to maintain an escape route for any animals inside the burrow.

Compensatory Mitigation

A minimum of 6.5 acres of foraging habitat (calculated from a 300 feet foraging radius around the burrow) for each pair or unpaired resident bird shall be acquired and permanently protected to offset the loss of foraging and burrow habitat if burrowing owls are detected within the BSA during the nesting or winter season. The protected lands will be adjacent to occupied burrowing owl habitat and at a location acceptable to CDFG. Protection of additional habitat acreage for each pair or unpaired resident bird may be applicable in some instances.

Existing unsuitable burrows shall be enhanced (enlarged or cleared of debris) or new burrows created (by installing artificial burrows) at a ratio of 2:1 on the protected lands site if destruction of occupied burrows is unavoidable.

The Department shall provide funding for long-term management and monitoring of the protected lands. The monitoring plan will include success criteria, remedial measures, and an annual report to CDFG.

Coast (California) horned lizard

Avoidance and Minimization

A biological monitor will clear the project area prior to the start of all ground disturbing activities to minimize potential effects to this species.

Golden eagle, Loggerhead shrike, Northern harrier, Tricolored blackbird, White-tailed kite

Avoidance and Minimization

A qualified biologist will conduct preconstruction bird surveys no more than two weeks prior to the start of construction for activities occurring during the breeding season (February 1st to August 31st) or during the wintering period (September 1st to January 31st) for sensitive wintering species.

If an active nest or roost is discovered, a non-disturbance buffer will be established at a distance sufficient to minimize disturbance. Buffer size will be determined in cooperation with the CDFG and the USFWS.

A qualified biologist will monitor nests for signs of disturbance if rescheduling work around active nests/roosts of special status bird species is infeasible. Work will cease immediately

and the CDFG and the USFWS will be contacted if it is determined that project activities are resulting in nest/roost disturbance.

San Joaquin whipsnake, California tiger salamander (CTS)

Avoidance and Minimization

A USFWS approved biologist with a valid 10(a)1(A) permit to handle the San Joaquin whipsnake/California tiger salamander (CTS) will conduct a preconstruction survey of the work site 14 days prior to the start of construction activities, including vegetation clearing, grubbing, or other ground disturbance activities. The survey will consist of inspecting all suitable aestivation habitat (i.e., small mammal burrows, fissures) within the area that will be permanently or temporarily affected. If San Joaquin whipsnake/CTS adults or juveniles are found, all work that could result in direct injury, disturbance, or harassment of the individual animal will immediately cease. The biological monitor will contact the USFWS and CDFG to determine whether relocating the species is appropriate. If the agencies approve of relocation, a USFWS approved biologist will be allowed sufficient time to move the species from the work site before construction activities begin. Only USFWS approved biologists may participate in activities associated with the capture, handling, and monitoring of the San Joaquin whipsnake/CTS.

A biological monitor will be on-site during ground disturbing activities to inspect for the San Joaquin whipsnake/CTS that may be unearthed. Should a San Joaquin whipsnake/CTS be identified, construction would be halted, the USFWS would be contacted, and the individual would be located by a permitted biologist prior to restarting construction with USFWS approval.

California tiger salamander (CTS)

Compensatory Mitigation

All temporary and permanent effects to suitable habitat will be mitigated because the presence of the CTS is inferred throughout habitats located in the BSA. There will be 0.37 acres of permanent effects to be compensated for at a 3:1 ratio, which will result in 1.11 acres of mitigation for the CTS. There will be 14.19 acres of temporary and construction effects that will be mitigated at a ratio of 1.1:1 of landscaped/agricultural lands, for a total 15.61 acres. As per the discussion for CRLF, 14.19 acres of temporarily disturbed area will be restored upon project completion and will be used as on-site mitigation for this species. The remaining temporary and permanent mitigation required off-site is 2.53 acres. Total on-site and off-site mitigation for the CTS will be 16.72 acres.

Western spadefoot toad, California red-legged frog (CRLF)

Seasonal Avoidance - To the extent practicable, construction will not occur during the wet season, when the western spadefoot toad/California red-legged frog (CRLF) is more likely to disperse through upland habitats. Vegetation clearing may be done outside of this period, if necessary, to avoid disturbance to nesting birds.

Preconstruction Surveys - A qualified biologist will conduct a western spadefoot toad/CRLF preconstruction survey of the work site 14 days prior to the start of construction activities, including vegetation clearing, grubbing, or other ground disturbance activities. If western spadefoot toad/CRLF adults, tadpoles, or eggs are found, the biologist will contact the

USFWS and CDFG to determine whether relocating the species is appropriate. If the agencies approve relocation, a USFWS approved biologist will be allowed sufficient time to move the species from the work site before work activities begin. Only USFWS approved biologists will participate in activities associated with the capture, handling, and monitoring of the western spadefoot toad/CRLF.

Construction Area Delineation - Prior to any ground disturbance on the project site, the boundaries of the project area will be clearly delineated with orange-colored plastic high-visibility construction fencing (ESA fencing) or solid barriers to prevent workers or equipment from inadvertently straying from the project area.

Wildlife Exclusion Fencing - Exclusion fencing will be erected along each section of the project area before project activities begin, including staging equipment and supplies. Fencing will be a minimum of 3 feet high and buried in the soil or form a tight seal with the pavement to prevent the western spadefoot toad/CRLF from crawling under and entering the project area.

Procedure for Western Spadefoot Toad Discovery On-site - If a western spadefoot toad/CRLF, or any amphibian that construction personnel believes to be this species, is encountered during project construction, or if any contractor, employee, or agency personnel inadvertently kills or injures a western spadefoot toad/CRLF, the following protocol will be followed:

- All work that could result in direct injury, disturbance, or harassment of the individual animal will immediately cease.
- The resident engineer will be immediately notified.
- The resident engineer will notify the approved on-site biologist.
- The approved on-site biologist will immediately transport the western spadefoot toad/CRLF in a cool, moist container to a suitable location outside the project area (e.g., suitable habitat adjacent to but outside of the BSA). A qualified biologist, in consultation with the USFWS and CDFG, will determine this relocation site in advance. The relocated individual(s) will be monitored until it is determined that predators or other dangers are not imperiling the animal(s).
- The approved on-site biologist will notify the USFWS within 24 hours after the western spadefoot toad/CRLF has been relocated.
- The biologist will contact the USFWS and CDFG within 24 hours if a western spadefoot toad/CRLF has been killed or injured.

Entrapment Avoidance - To prevent inadvertent entrapment of the western spadefoot toad/CRLF or other animals during construction, all excavated, steep-walled holes or trenches more than 2 feet deep will be covered with plywood or similar materials at the end of each working day, or the holes or trenches will contain one or more escape ramps constructed of earth fill or wooden planks. Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals. If, at any time, a trapped western spadefoot toad/CRLF or other wildlife is discovered, the USFWS and CDFG will be contacted.

Prohibition of Erosion Control Materials Potentially Harmful to the Western Spadefoot Toad/CRLF - Plastic monofilament netting (erosion control matting) or similar material will not be used at the project site because the western spadefoot toad/CRLF may become entangled and trapped in it. Tightly woven fiber netting or similar material will be used for erosion control or other purposes.

Prevention of Introduction of Amphibian Diseases - Biologists will take all precautions to prevent spread of amphibian diseases when handling the listed species. All equipment and clothing will be disinfected per protocol standards.

Daily Work Area Surveys - The biological monitor will conduct daily surveys along the work area boundaries and will notify the USFWS approved biologist if the western spadefoot toad/CRLF is found within the work area.

California red-legged frog (CRLF)

Compensatory Mitigation

Because the presence of the CRLF is inferred throughout habitats located within the BSA, all temporary and permanent effects to suitable habitat will be mitigated. The Department proposes to mitigate for the temporary and permanent effects to upland habitat for this species. Permanent effects (0.37 acres) would be mitigated at a 3:1 ratio for a total of 1.11 acres. Temporary effects (14.19 acres) would be mitigated at a 1.1:1 ratio, or 15.61 acres. Approximately 14.19 acres (1:1 ratio) will be mitigated on site through the restoration of the temporarily disturbed on-site habitats following construction. The remaining 1.42 acres (or 0.1:1 ratio) for temporary effects and 1.11 acre for permanent effects (a total of 2.38 acres) will be mitigated at an off-site location to be determined through consultation with the USFWS. Total on-site and off-site mitigation for effects to habitat for the CRLF will be 16.72 acres.

Large-flowered fiddleneck

Avoidance and Minimization

- For any FESA listed plant populations that are located during construction, exclusion fences will be installed along the margins of the work area wherever the work area is located 50 feet or less from the avoided plant populations. Fencing will be installed prior to ground-disturbing activities. Avoided plant populations will be clearly marked to prevent inadvertent encroachment into the avoided areas during construction. All fencing will remain in place until all construction activities are completed.
- As recommended by the USFWS, a buffer width of 50 feet will be utilized to protect the FESA listed plant populations at all locations within and adjacent to the BSA.
- No herbicides, pesticides, or fertilizers will be applied within 50 feet of areas that are occupied by any large-flowered fiddleneck located on-site.
- Disturbance of potential habitat will be avoided, to the maximum extent possible.
- No sod-forming or non-native invasive plants will be planted.

- Topsoil disturbed during construction will be replaced, when possible, to promote the survival of any dormant seeds of large-flowered fiddleneck that may be present within the seed bank.

Longhorn fairy shrimp (LHFS), Vernal pool fairy shrimp (VPFS)/Vernal Pool tadpole shrimp (VPTS)

Avoidance and Minimization

Construction of bioswales and the post construction restoration of drainage ditches will minimize effects to the LHFS, VPFS and VPTS. Additionally, the following precautionary measures will be implemented.

- Prior to the disturbance of areas identified as potential habitat for LHFS, the contractor will remove and conserve the top six inches of topsoil within the identified drainages. Upon restoration of these drainages, or construction of bioswales or vegetated drainages of equivalent hydrology, the contractor will restore this soil to the bed of the drainage. The conservation of soil will serve to mitigate effects by conserving cysts of LHFS that can become active following the establishment of an appropriate hydrology regime.
- Work within potential habitat will be limited to the dry season (April 15th to October 15th).
- LHFS habitat will be avoided to the maximum extent possible.

Invasive Species

To reduce the spread of invasive non-native plant species and minimize the potential decrease of palatable vegetation for wildlife species, the Department will comply with Executive Order 13112. In the event that high- or medium-priority noxious weeds are disturbed or removed during construction or construction-related activities, the contractor will contain the plant material associated with these noxious weeds and dispose of it in a manner that will not promote the spread of the species. Areas where noxious weeds are disturbed or removed will be immediately replanted with fast-growing native grasses or a native erosion control seed mixture. If seeding is not possible, the area will be covered with heavy black plastic solarization material until completion of the project.

Specific measures under that general heading could include developing an Invasive Weed Eradication Plan that targeted invasive species on the California Department of Food and Agriculture list, as well as other non-native, invasive species found on-site; preventing disposal of soil and plant materials from any areas that support invasive species into areas that support stands dominated by native vegetation; using only native, non-invasive species or non-persistent hybrids for erosion control will consist of native, non-invasive species or non-persistent hybrids; washing all equipment prior to entering the BSA, and using gravel or fill from weed-free sources.

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Appendix D: List of Acronyms

AADT	Average Annual Daily Traffic
BAAQMD	Bay Area Air Quality Management District
BSA	biological study area
BMP	Best Management Practices
Cal IPC	California Invasive Plant Council
CCA	cross-centerline accident
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CMP	Corrugated Metal Pipe
CNDDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CTS	California tiger salamander
CWUS	culverted water of the United States
Department	California Department of Transportation
dbh	diameter at breast height
DPS	Distinct Population Segment
EFH	essential fish habitat
ESA	environmentally sensitive area
FESA	Federal Endangered Species Act
°F	degrees Fahrenheit
ft	foot/feet
FHWA	Federal Highway Administration
HOV	high-occupancy vehicle
I-580	Interstate 580 freeway
LHFS	longhorn fairy shrimp
MBTA	Migratory Bird Treaty Act
MTC	Metropolitan Transportation Commission
MVZ	Museum of Vertebrate Zoology
NES	Natural Environment Study
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration

NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
OWUS	other waters of the U.S.
PM	post mile
Quad	quadrangle
RCP	Reinforced Concrete Pipe
ROW	right of way
RWQCB	Regional Water Quality Control Board
SHOPP	State Highway Operation and Protection Program
SIP	Steel Inlet Pipe
SJKF	San Joaquin kit fox
SWDR	Storm Water Data Report
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TCIF	Trade Corridor Improvement Funds
TNW	Traditional Navigable Waters
USACE	U.S. Army Corps of Engineers
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VPFS	vernal pool fairy shrimp
VPTS	vernal pool tadpole shrimp
VIA	Visual Impact Assessment
WEF	wildlife exclusion fencing

Appendix E: List of Technical Studies

Air Quality Study Report, July 2009

Archaeological Survey Report (ASR), June 2009

Preliminary Geotechnical Report, July 2009

Highway Operational Report, March 2009

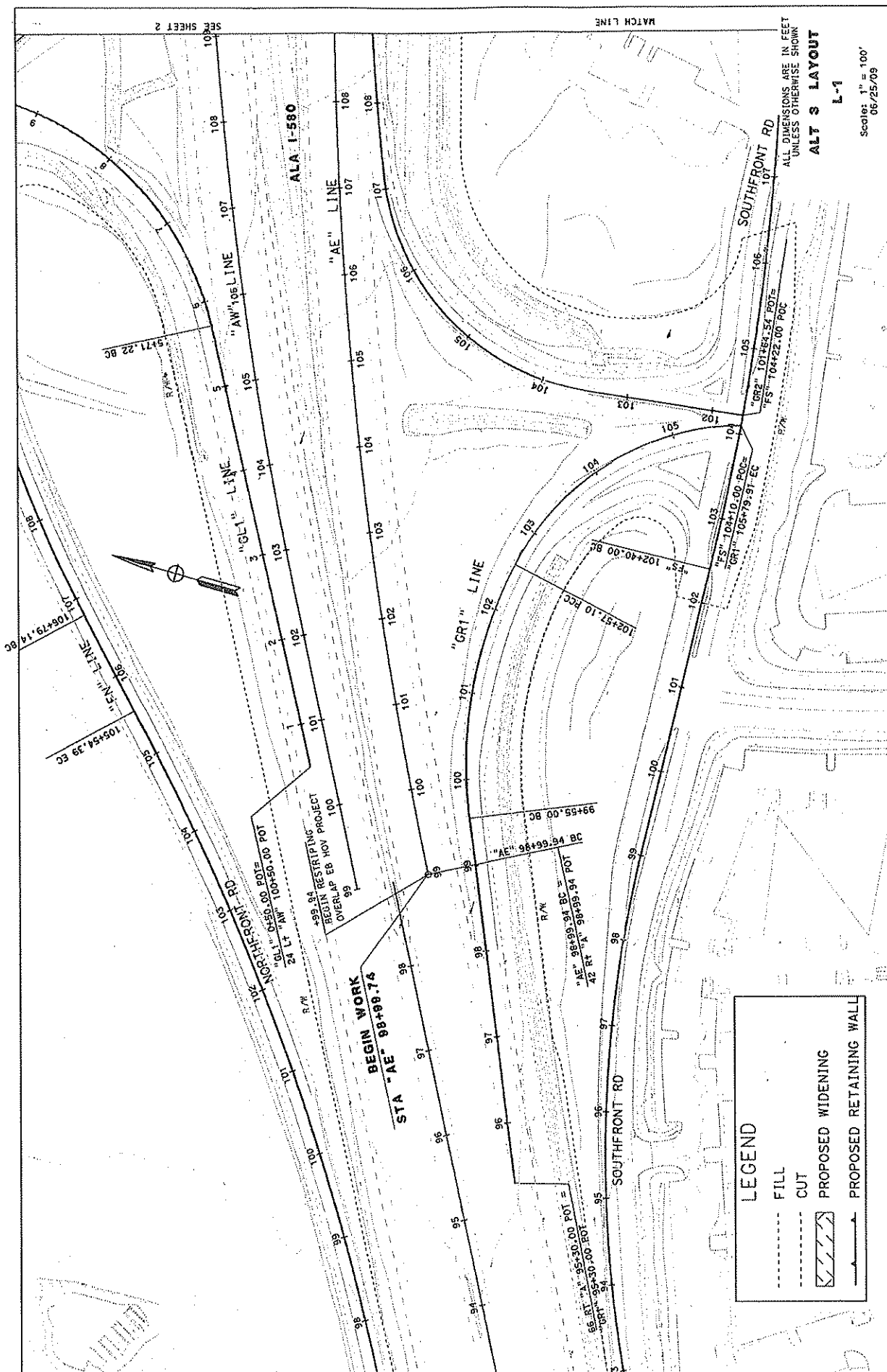
Historic Property Survey Report (HPSR), June 2009

(Draft) Natural Environment Study, June 2009

Traffic Noise Study Report, July 2009

Visual Impact Assessment, May 2009

Appendix F: Preliminary Project Plans

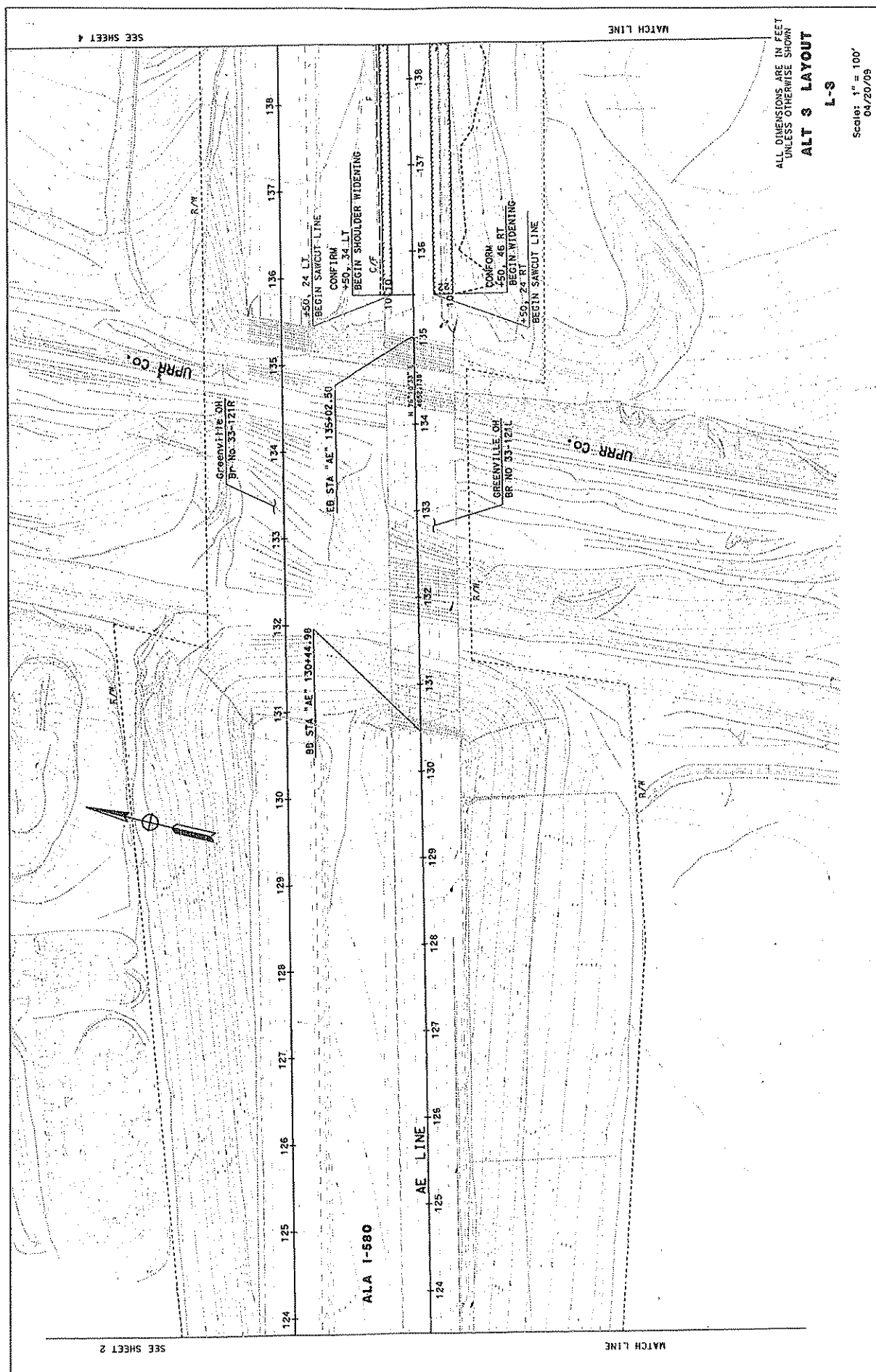


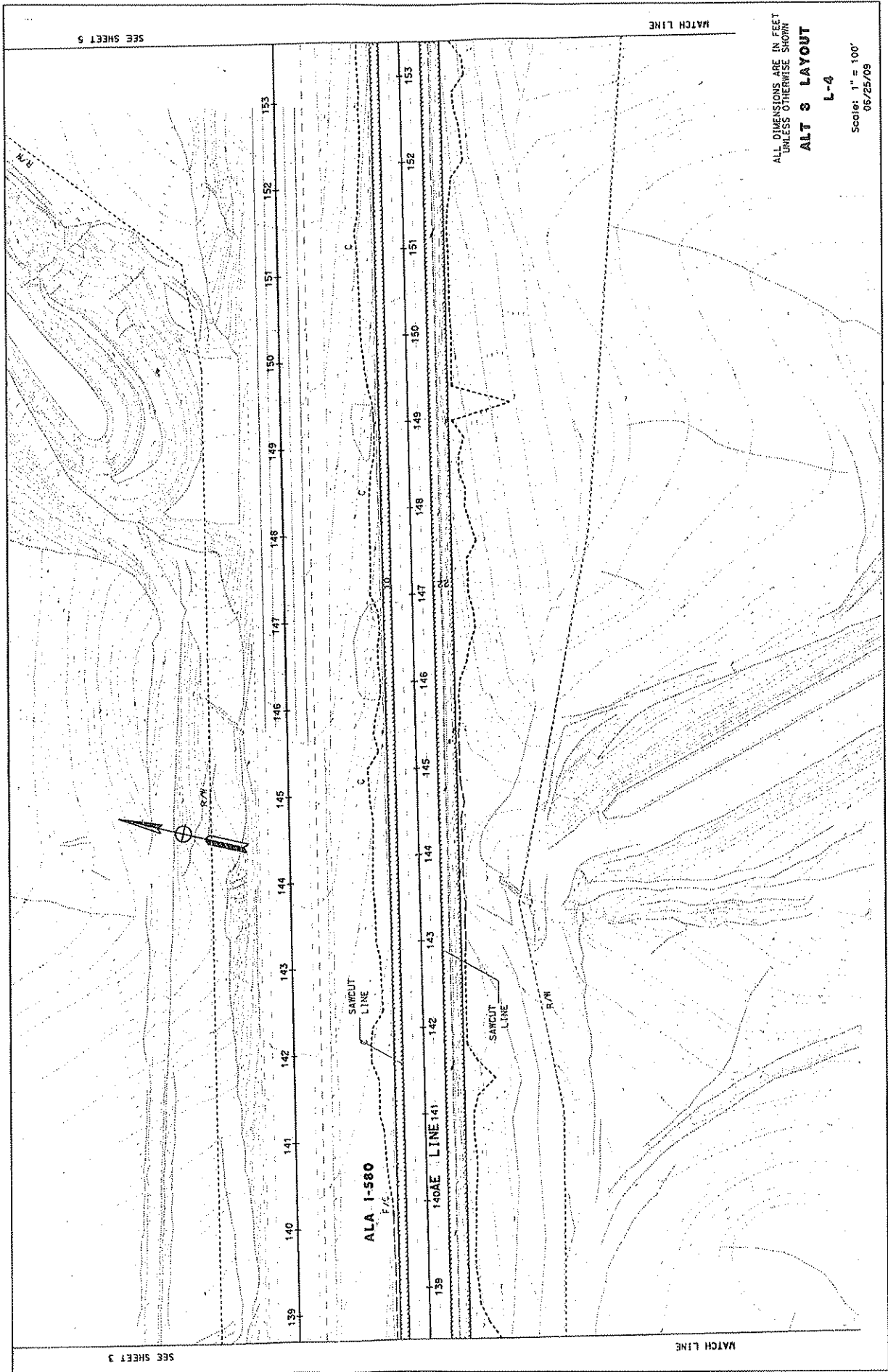
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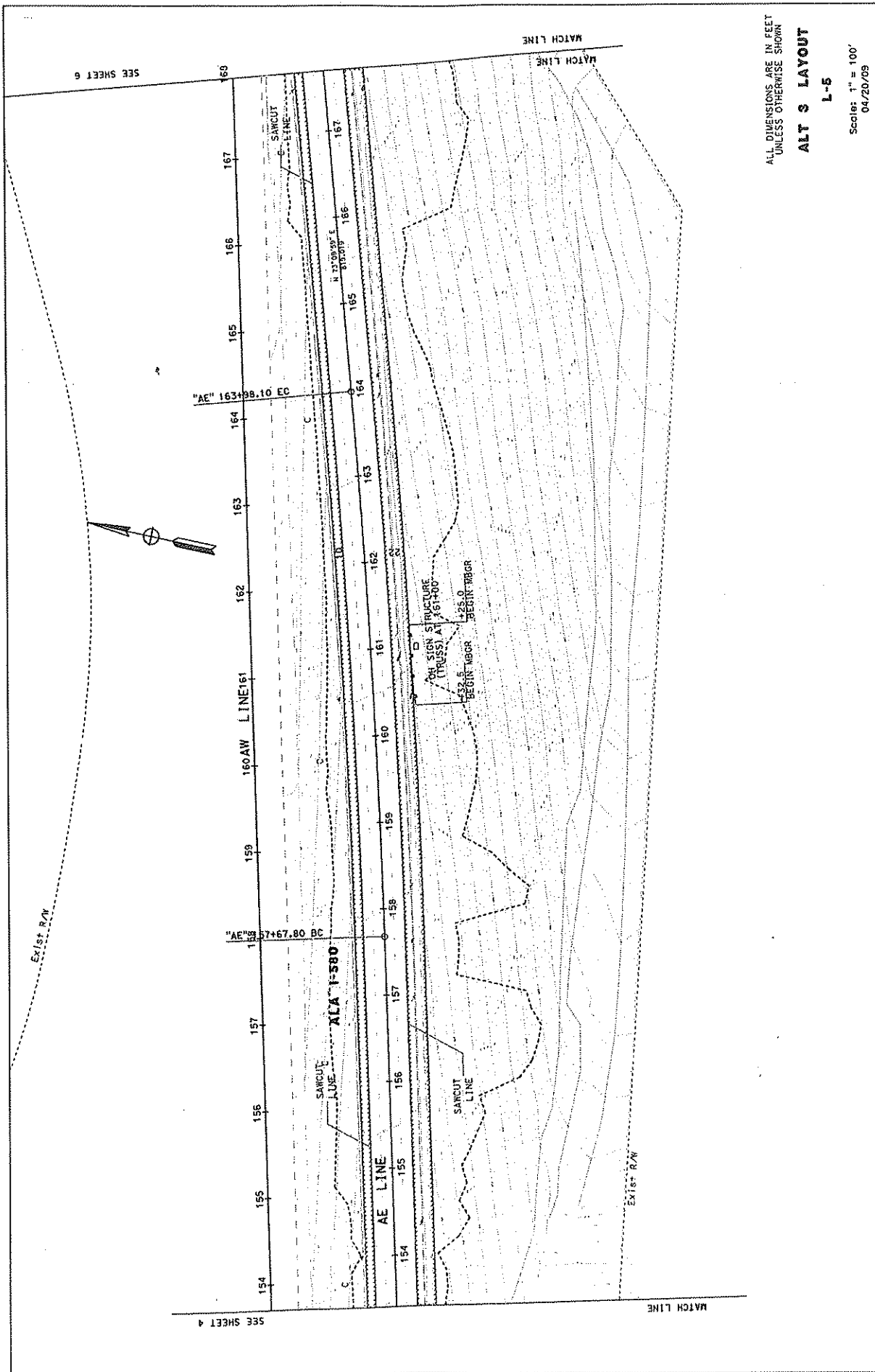
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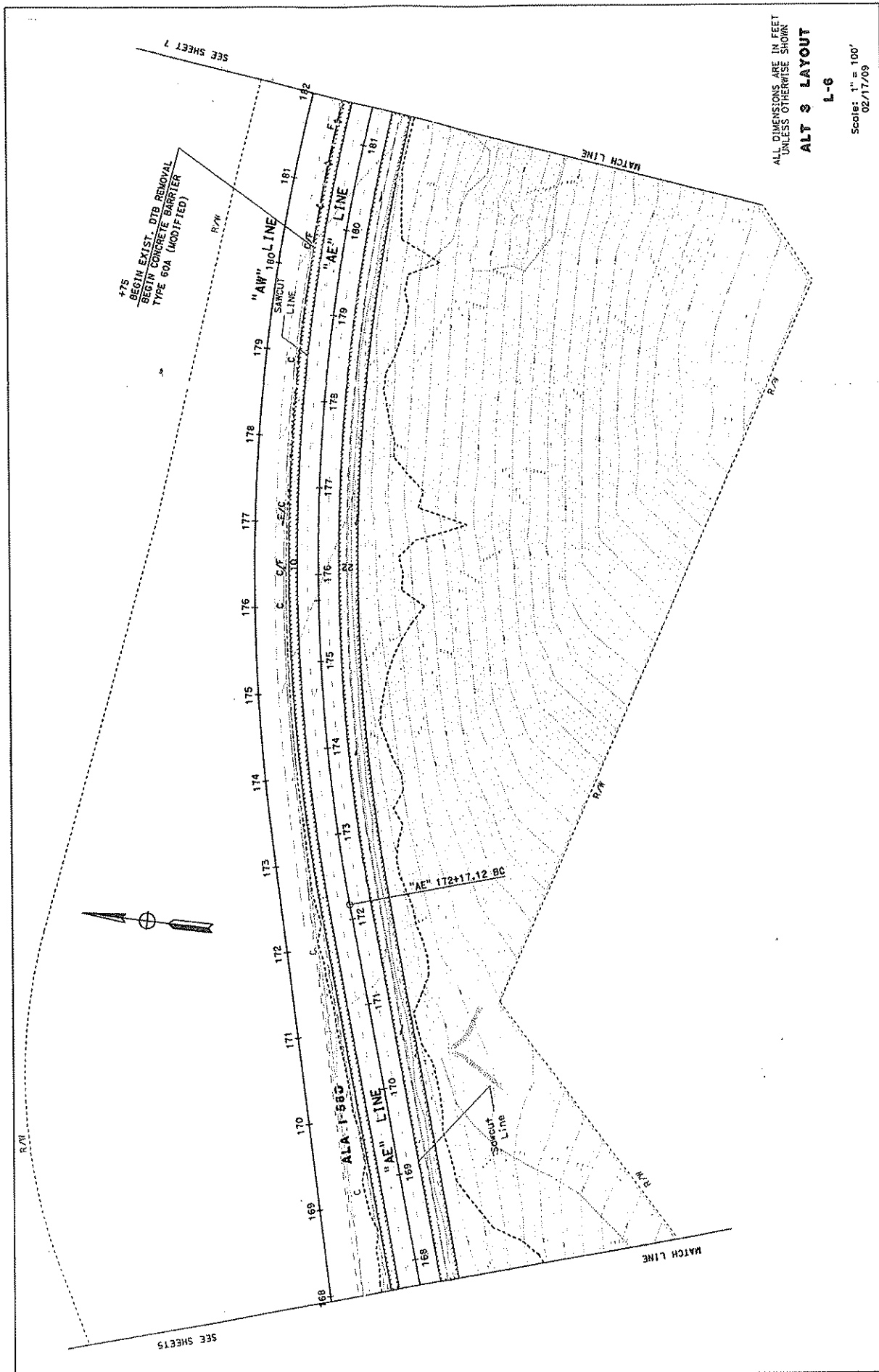
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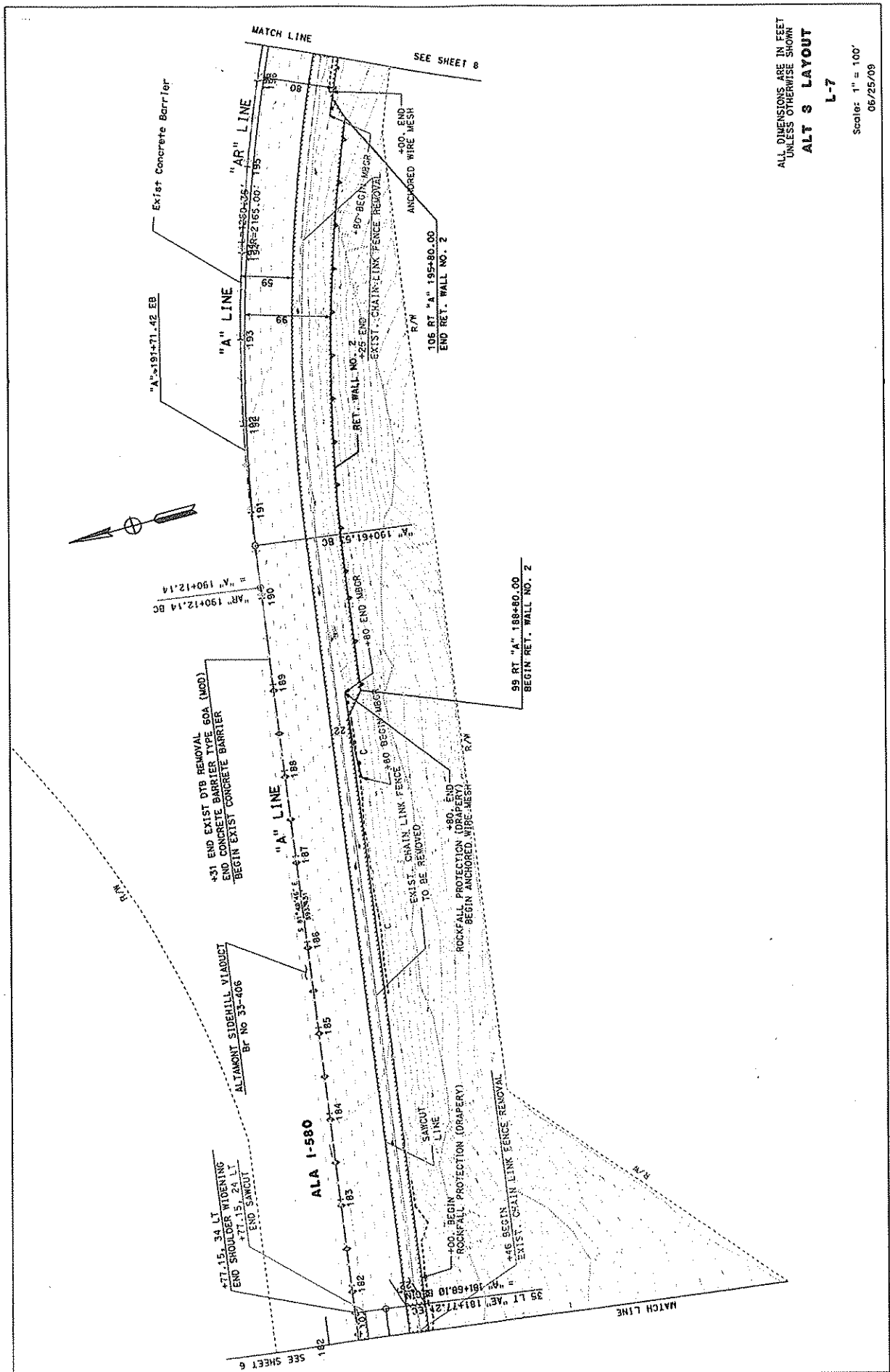


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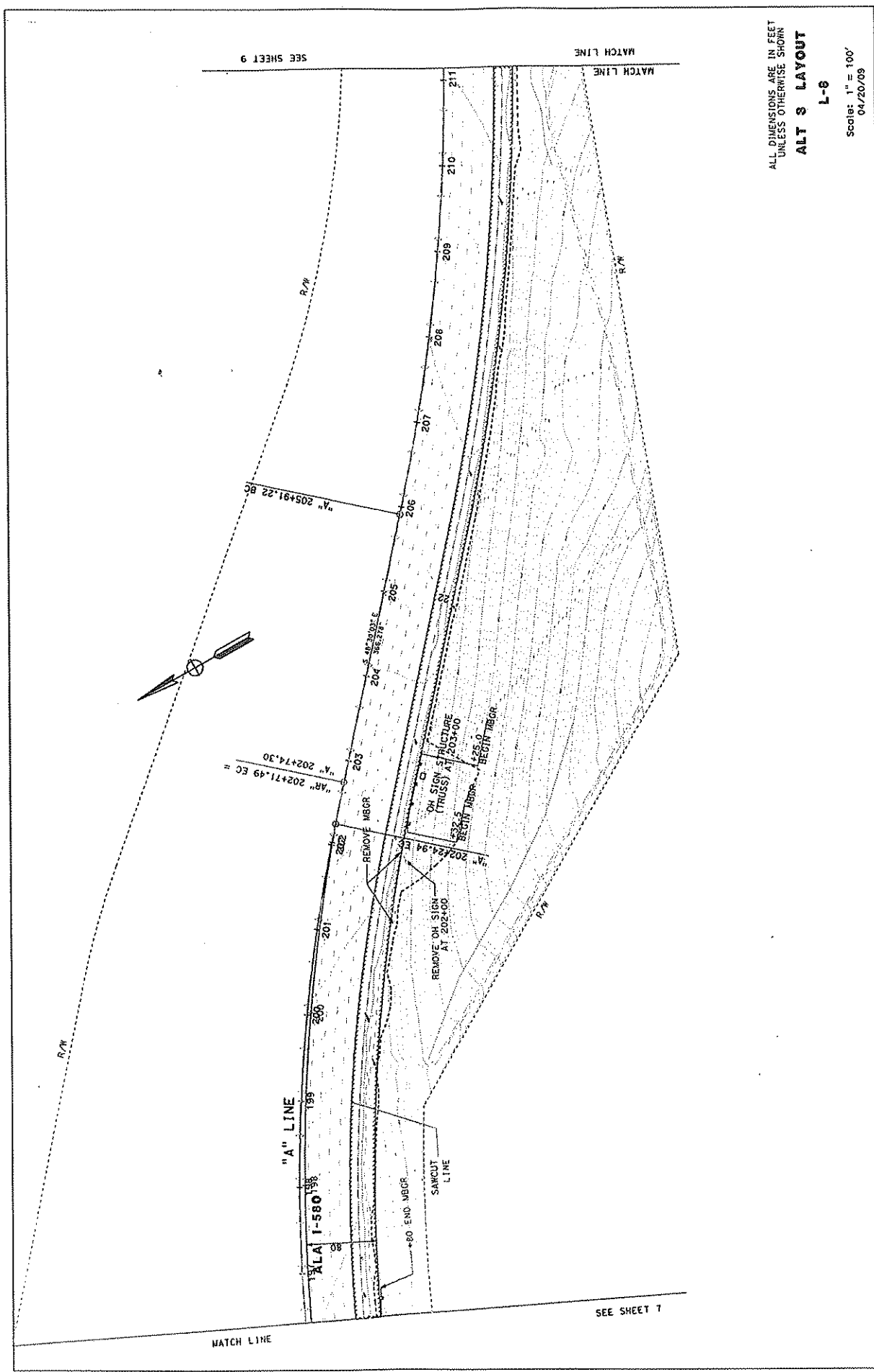




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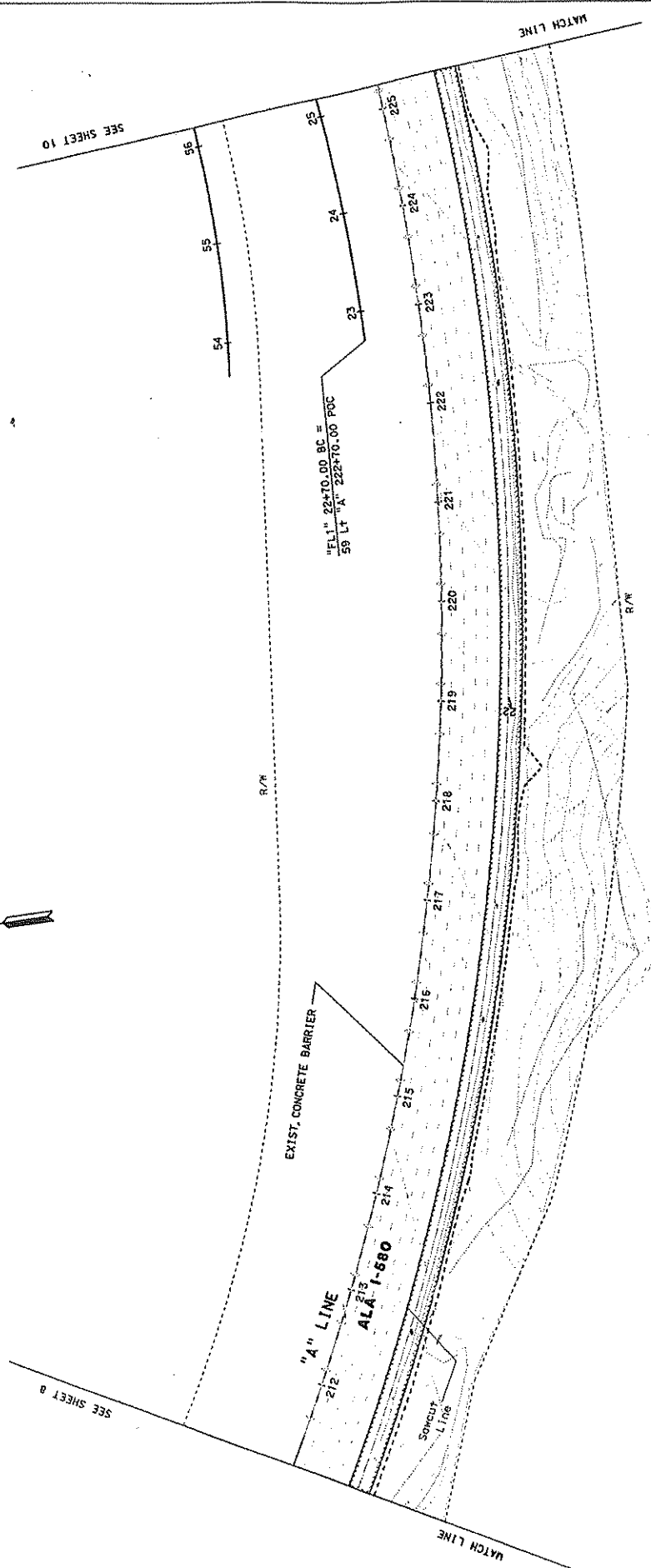
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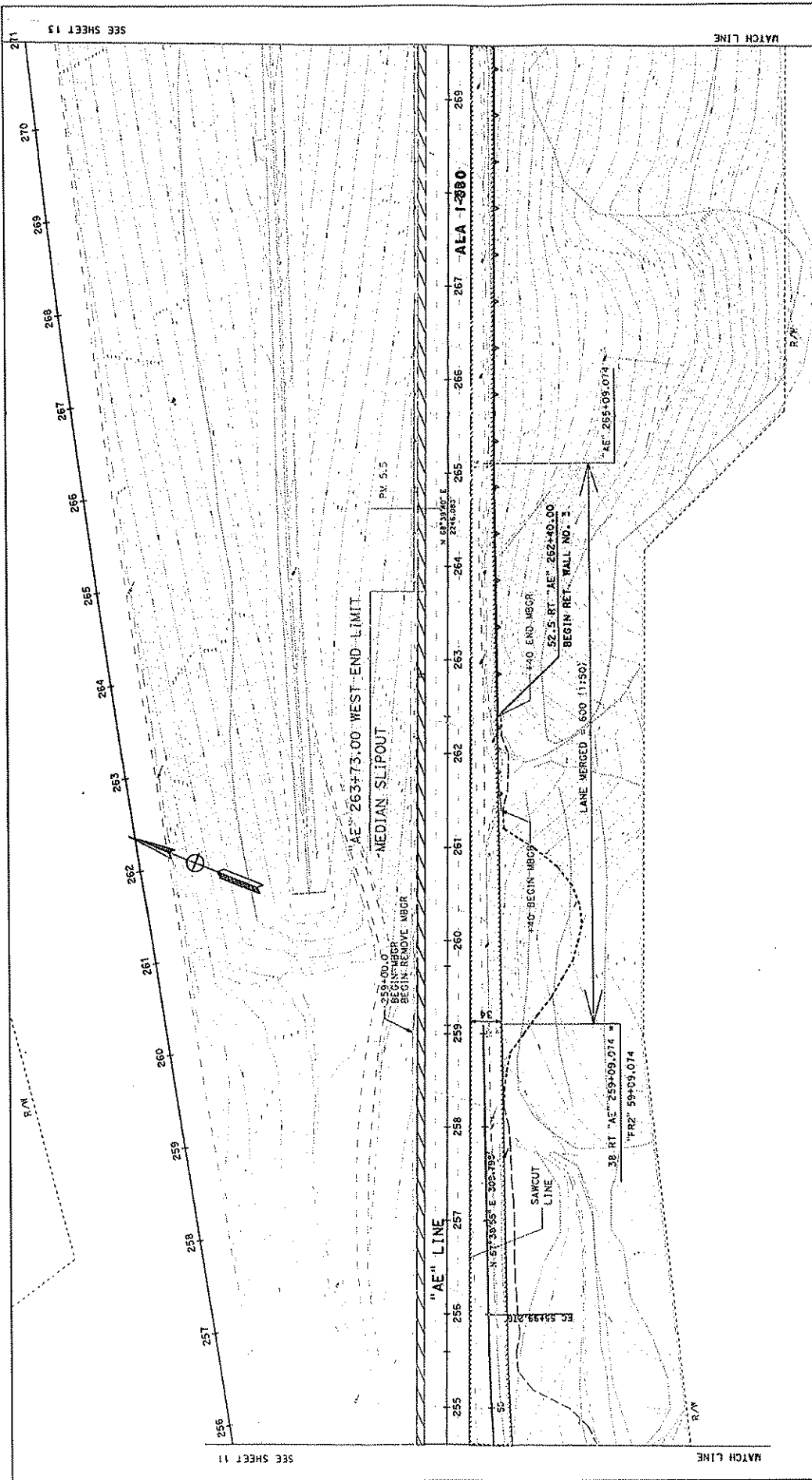
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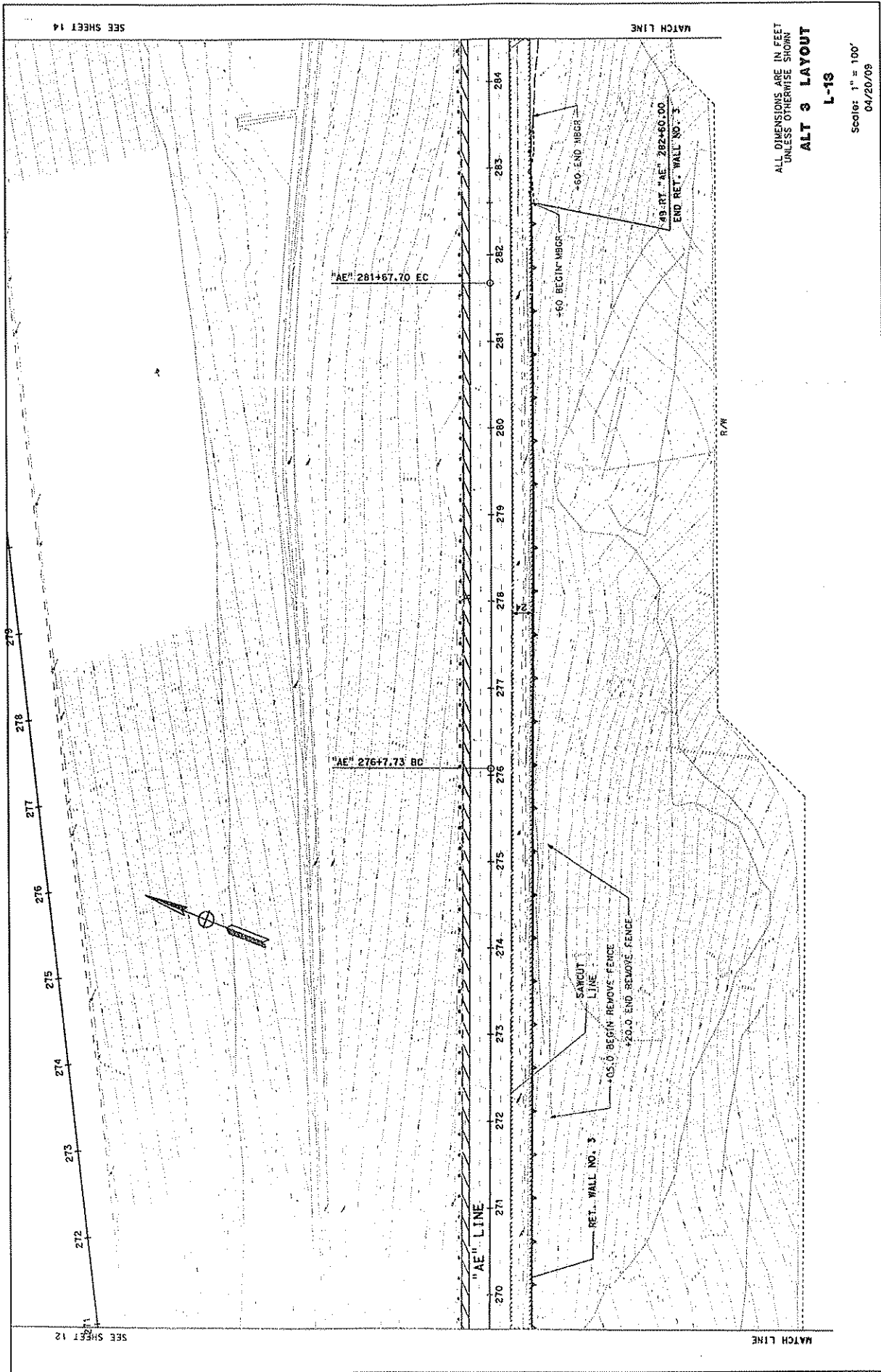
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